

CENWO-DE

15 JUL 2007

MEMORANDUM FOR CHIEF, CENWO-OD

SUBJECT: Garrison Dam/Lake Sakakawea Master Plan with Integrated Environmental Assessment, Design Memorandum MGR-107D

X I approve of subject Master Plan and FONSI.

\_\_\_\_\_ I approve of subject Master Plan and FONSI with comments.

\_\_\_\_\_ I do not approve of subject Master Plan and FONSI.



DAVID C. PRESS  
Colonel, EN  
Commanding

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FINDING OF NO SIGNIFICANT IMPACT  
FOR MASTER PLAN UPDATE  
MISSOURI RIVER, NORTH DAKOTA  
GARRISON DAM/LAKE SAKAKAWEA  
November 2007

In accordance with the National Environmental Policy Act and implementing regulations, an Environmental Assessment (EA) has been prepared and integrated into the 2007 Master Plan Update for the Garrison Dam/Lake Sakakawea Project in North Dakota. The updated Master Plan will provide guidance for stewardship of natural resources and management for long-term public access to, and use of, the natural resources of Lake Sakakawea. The Master Plan provides a comprehensive description of the project, a discussion of factors influencing resource management and development, an identification and discussion of special problems, a synopsis of public involvement and input to the planning process, descriptions of past and present development and resource objectives and needs. The Master Plan update concerns only areas under the present ownership of the Corps of Engineers (Corps). It does not address or relate to Corps management policies that govern Lake Sakakawea water levels and management.


Two alternatives and their corresponding impacts associated with this Federal action have been analyzed for this project. The two alternatives are the No Action and the proposed Master Plan update. Resource categories that were evaluated included, but were not necessarily limited to, land allocations and land use classifications, visual aesthetics, mineral resources, terrestrial wildlife, associated aquatic habitats and species, threatened and endangered species, invasive plants and aquatic nuisance specs, cultural resources, recreation, water quality, and socioeconomics.

Under the No Action alternative, the 1978 Master Plan would not be updated. The alternative of no action is assumed to result in diminished success in pursuing resource objectives of the Garrison Dam/Lake Sakakawea project and, as a result, was eliminated from further consideration. If the 1978 Master Plan was not updated, future major developments or resource management policies would require approval on a case-by-case basis without the benefit of evaluation in the context of an overall plan.

The preferred alternative, the proposed Master Plan update, utilized input from the tribes, other Federal, State, and local agencies and the public to determine whether the proposed action requires the preparation of an Environmental Impact Statement (EIS). It was determined the Master Plan update would not result in significant impacts to any of the resources associated with the proposed project. Under the preferred alternative, the primary benefit would be the update of the 1978 Master Plan to reflect important changes in project-use conditions and land-use reclassifications. No adverse impacts to threatened or endangered species are expected to occur as a result of projects proposed under the updated Master Plan. The proposed actions would be in compliance with applicable environmental statutes. Further, due to the incorporation of the Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historical Preservation Act, as amended, 2004, protection of known cultural resources would be more comprehensive and concise than in the past.

Based on the EA, it is my finding that the proposed Federal activity will have no significant adverse impacts on the environment including no significant impact to the quality of the human environment. Therefore, an EIS will not be prepared.

14 Dec 07  
Date

  
David C. Press  
Colonel, Corps of Engineers  
District Commander





**U.S. Army Corps  
of Engineers**  
Omaha District

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**Garrison Dam/Lake Sakakawea Master Plan with Integrated Programmatic  
Environmental Assessment**

**Missouri River, North Dakota**

**Update of Design Memorandum MGR-107D**

**December 14, 2007**

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## ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
ACHP	Advisory Council for Historic Preservation
ADA	Americans with Disabilities Act
AF or A-F	acre-feet; 1 AF = 43,560 cubic feet or 325,851 gallons
AIRFA	American Indian Religious Freedom Act
ANS	Aquatic Nuisance Species
ARPA	Archeological Resources Protection Act
ATV	all-terrain vehicle
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BiOp	Biological Opinion
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
° C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs or c.f.s.	cubic feet per second
COE	(U.S. Army) Corps of Engineers
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DM	Design Memorandum
DOI	Department of the Interior
DOT	Department of Transportation
EA	Environmental Assessment
EC	Engineer Circular
EIS	Environmental Impact Statement
EM	Engineer Manual
EMS	Environmental Management System
E.O.	Executive Order
EOP	Environmental Operating Principle(s)
EP	Engineer Pamphlet
EPA	Environmental Protection Agency
ER	Engineer Regulation
ERDC	Engineer Research and Development Center
ESA	Endangered Species Act
° F	degrees Fahrenheit
FONSI	Finding of No Significant Impact
FR	Federal Register
ft or ft.	foot or feet
FWCA	Fish and Wildlife Coordination Act

FY	Fiscal Year
GDU	Garrison Diversion Unit
GIS	Geographic Information System
GPS	Global Positioning System
GSA	General Services Administration
ha	hectare(s); 1 ha = 10,000 square meters or 2.47 acres
HPMP	Historic Properties Management Plan
HQUSACE	Headquarters, U.S. Army Corps of Engineers
km	kilometer(s); 1 km = 1000 meters or 0.6215 miles
kW	kilowatt(s); 1 kW = 1000 Watts of electricity
kWh	kilowatt hours
LWCF	Land and Water Conservation Fund
m or m.	meter(s); 1 m = 39.37 inches or 3.28 feet
MAF	million acre-feet
MBTA	Migratory Bird Treaty Act
mg/l	milligrams per liter; equivalent to parts per million
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MR&I	Municipal, Rural, and Industrial (water supply)
MRM	Multiple Resource Management
msl or m.s.l.	mean sea level
MU	Management Unit
NAGPRA	Native American Graves Protection and Repatriation Act
NAVD	North American Vertical Datum of 1988
NAWMP	North American Waterfowl Management Plan
ND	North Dakota
NDDA	North Dakota Department of Agriculture
NDDOT	North Dakota Department of Transportation
NDGFD	North Dakota Game and Fish Department
NDPRD	North Dakota Parks and Recreation Department
NDSIRC	North Dakota State Insect Reference Collection
NDSU	North Dakota State University
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWD	Northwestern Division, U.S. Army Corps of Engineers
NWR	National Wildlife Refuge
OMBIL	Operations and Maintenance Business Information Link
OMP	Operational Management Plan

ORV	off-road vehicle
PA	Programmatic Agreement
P.L.	Public Law
PPJV	Prairie Pothole Joint Venture
ppt	parts per thousand
R	Range (in legal descriptions of lands)
RA	Recreation Area
RCRA	Resource Conservation and Recovery Act
RM	river mile
RO	Resource Objective
RV	recreational vehicle
SCORP	State Comprehensive Outdoor Recreation Plan
SCS	Soil Conservation Service
SHPO	State Historic Preservation Officer
SMP	Shoreline Management Plan
SP	State Park
SPR or SR	State Planning Region
sq. mi.	square mile(s); 1 sq. mi. = 640 acres
SWG	State Wildlife Grant
T	Township (in legal descriptions of lands)
TAT	Three Affiliated Tribes (Mandan, Hidatsa, Arikara)
TCP	Traditional Cultural Properties
THPO	Tribal Historic Preservation Officer
U.S. or US	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VM	Vegetative Management
WA	Wildlife Area
WAPA	Western Area Power Administration
WM	Wildlife Management
WMA	Wildlife Management Area
WNV	West Nile Virus
WRDA	Water Resources Development Act
yr or yr.	year



## **1. INTRODUCTION**

### **1.1. PROJECT AUTHORIZATION**

The Garrison Dam/Lake Sakakawea project was authorized on December 22, 1944, by the Flood Control Act of 1944, Public Law (P.L.) 534, 78th Congress, 2nd session, along with four other Missouri River main stem projects -- Gavins Point, Fort Randall, Big Bend, and Oahe. These five main stem reservoirs are elements of the comprehensive development program in the Missouri River Basin, the Pick-Sloan Plan. Comprehensive development was proposed by the U.S. Army Corps of Engineers (Corps) in House Document 475 and by the Bureau of Reclamation (BOR) in Senate Document 191; the coordinated plan was presented to Congress in Senate Document 247 (all 78th Congress, 2nd session). This plan became known as the Pick-Sloan Missouri Basin Program. Fort Peck Dam, located in northern Montana, was constructed prior to the Pick-Sloan Plan but is operated as part of the Missouri River main stem system, which is shown in figure 1-1. The Garrison Dam/Lake Sakakawea project (figure 1-2) was authorized for flood control, navigation, irrigation, hydropower, municipal and industrial water supply, fish and wildlife, recreation and other purposes.

### **1.2. THE MASTER PLAN**

#### **1.2.1. MASTER PLAN PURPOSE AND NEED**

The Master Plan provides direction for project development and use. It is a vital tool for the responsible stewardship of project resources for the benefit of present and future generations. The Master Plan is programmatic and identifies conceptual types and levels of activities, not designs, siting, or estimated costs. All actions by the Corps and outgrantees must be consistent with the Master Plan. Therefore, the Master Plan must be kept current in order to provide effective guidance in Corps decision-making. The previous Master Plan was approved in 1978, and ten Master Plan Supplements were approved between 1984 and 2004. A Master Plan responds to regional and local needs, resource capabilities and suitabilities, and expressed public interests and desires, consistent with pertinent legislation and regulations and authorized project purposes. Except for project purposes, all the above factors have changed since 1978; this indicated the need for an updated Master Plan. This Master Plan documents policies and analyses that:

- Determine appropriate uses, types, and levels of development of project resources;
- Provide guidelines within which the Operational Management Plan, Shoreline Management Plan, and Annual Management Plans can be developed and implemented; and
- Establish a basis on which proposals for outgrants and recreational development by others can be evaluated.

#### **1.2.2. MASTER PLAN SCOPE**

This Master Plan includes guidance for appropriate uses, development, enhancement, protection, and conservation of the natural, cultural, and man-made resources at the Garrison Dam/Lake Sakakawea project. The plan includes: (1) a comprehensive

description of the project; (2) a discussion of factors influencing resource management and development; (3) a strategy for developing and managing project resources to meet the needs of the public and wildlife over a wide range of reservoir elevations; (4) a synopsis of public involvement and input; and (5) land classifications, resource objectives and identification of existing uses and needed development.

**Figure 1-1. Omaha District Civil Works Boundary Emphasizing the Missouri River Main Stem System of Six Dams and Reservoirs**

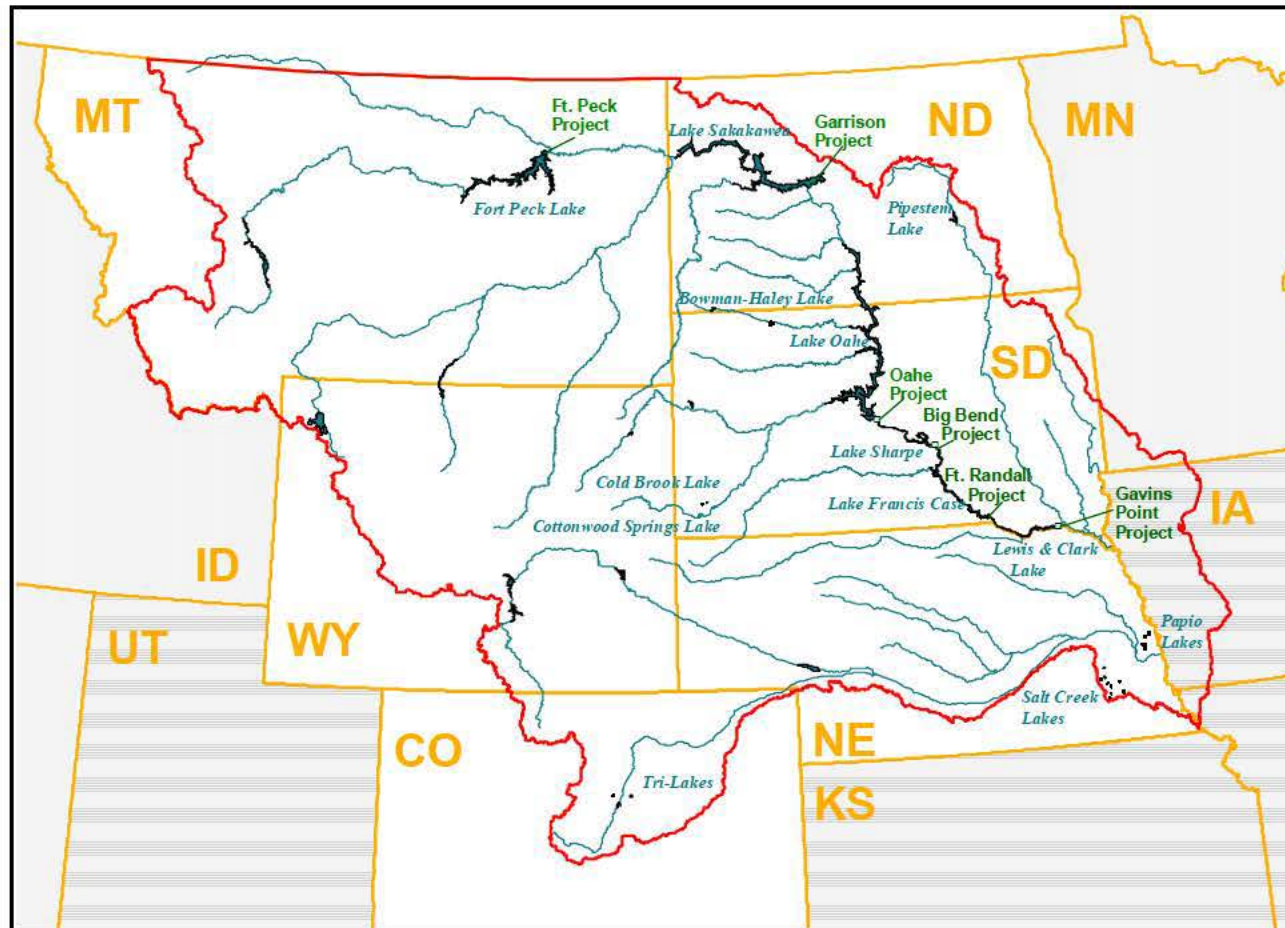
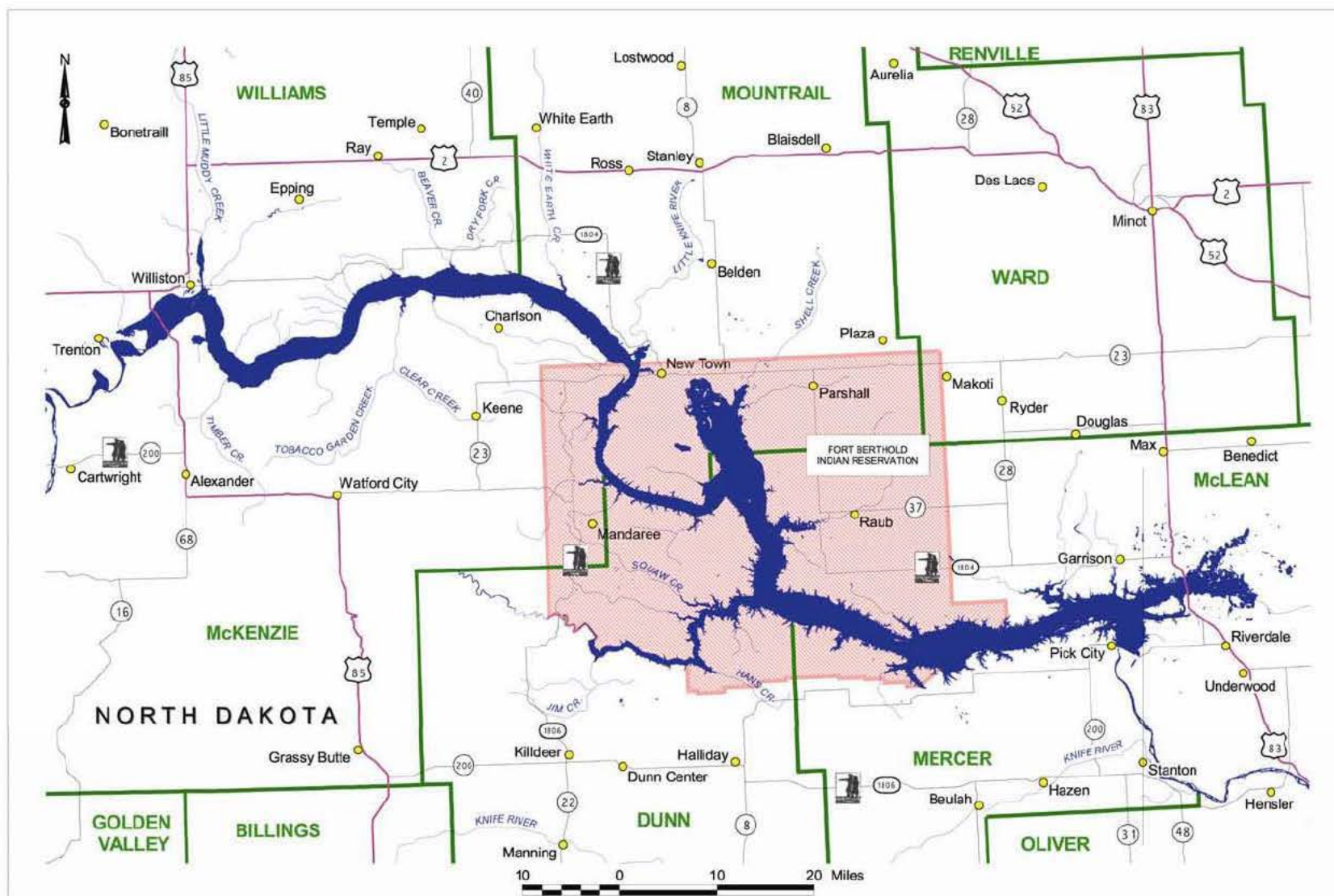


Figure 1-2. Location Map of Garrison Project



The proposed land classifications, recreation development, and management practices in the updated Master Plan apply to Corps public lands at the Garrison Dam/Lake Sakakawea project. Accordingly, any lands transferred in fee title to the Department of Interior (DOI) to be held by the Bureau of Indian Affairs (BIA) in trust for the Three Affiliated Tribes under the Fort Berthold Mineral Restoration Act prior to completion of this updated Master Plan are not included in the updated Master Plan.

The Corps has the mission of managing, conserving, and improving environmental and cultural resources at Corps reservoir projects while providing quality public outdoor-recreation experiences to serve the needs of present and future generations. To ensure consideration of natural and cultural resources throughout the Master Plan, the Programmatic Agreement (signed by the Corps and most Tribes in the upper Missouri River basin) and a programmatic Environmental Assessment (EA) are integrated into the Master Plan. The functions of the PA and EA in the Master Plan and in regard to subsequent proposals for implementation of development or management activities included in the Master Plan are provided in more detail in section 1.5.

#### **1.2.4. MASTER PLANNING PROCESS**

Preparation of this Draft Master Plan with integrated EA was a cooperative effort involving the Corps; Tribal representatives; Federal, State, and local governmental agencies; non-governmental organizations; and members of the general public. Some members of these Tribes, agencies, and organizations served on a Steering Committee to provide ongoing advice regarding Master Plan preparation and decision-making. Scoping comments from Tribal members, government agency officials, and the general public were important for identifying issues that needed to be addressed in the Master Plan/EA. Details regarding this public involvement effort are provided in Chapter 4.

The Corps' six-step planning process, provided in Appendix G, was used in developing the Master Plan. Public input was important in identifying significant resources; problems and opportunities; planning objectives and constraints; important features of the project area; and public needs, desires, and concerns. These factors were taken into account in forming alternative plans. The plans were assessed in the EA in regard to 1) meeting project purposes and expressed public needs and desires, 2) minimizing adverse environmental impacts, and 3) consistency with relevant laws and regulations and regional needs and plans. Based on the EA, one plan was selected as the recommended plan that provides most appropriately for stewardship, management activities, and types and levels of recreation development and use. This recommended Resource Plan involves cooperation between public entities and the private sector. It is comprised of management areas with land classifications and guidelines for management and development that are compatible with resource suitabilities; this ensures sustainability of natural, cultural, and man-made resources for future generations. For any conceptual development or management activity proposed in the updated Master Plan, the EA identifies any potentially significant impacts on the human or natural environment and indicates how these impacts can be avoided or minimized.

This updated Master Plan/EA was prepared in accordance with the following guidance:

- Engineer Manual (EM) 1110-1-400, Engineering and Design – Recreation Planning and Design Criteria, 31 July 1987;
- Engineer Pamphlet (EP) 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996;
- Engineer Regulation (ER) 200-1-5, Environmental Quality – Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles (EOP) and Doctrine, 30 October 2003;
- ER 200-2-2, Environmental Quality – Procedures for Implementing the National Environmental Policy Act (NEPA), 4 March 1988;
- ER 1105-2-100, Planning Guidance, 22 April 2000 (with Appendices D and G revised June 2004 and Appendix F revised January 2006); and
- ER 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996 (with changes 1 October 1999, 1 March 2002, and 15 August 2002).

### **1.3. PROJECT DESCRIPTION**

The Garrison Dam/Lake Sakakawea project is located in the Missouri River Valley in Dunn, McKenzie, McLean, Mercer, Mountrail, and Williams counties in North Dakota. The dam is located approximately 1,390 miles (in 1960 river miles) upstream from the mouth of the Missouri River at St. Louis, Missouri. The embankment of the dam, including the spillway, is 11,300 feet long. The left abutment of the dam is in Mercer County, and the right abutment is in McLean County.

Garrison Dam takes its name from the town of Garrison, in McLean County, near the dam. The name of the town itself was derived from the former garrison of Fort Stevenson, a military post used from 1867 to 1883, the site of which is now covered by the reservoir (Garrison Reservoir Geology, Paleontology, Archeology, and History Blue Book 1962).

Lake Sakakawea was named for the American Indian woman, Sakakawea. Sakakawea was a Shoshone girl who is believed to have been captured around 1800 by a Hidatsa war party when she was about 12 years old. She was married to French-Canadian trader Toussaint Charbonneau when Lewis and Clark hired him to accompany the expedition in the fall of 1804. Sakakawea became a valuable member of the Corps of Discovery, providing translation and contacts with the Shoshone living west of the Mandan and Hidatsa. A Shoshone band, led by an older brother of Sakakawea named Cameahwait, provided the expedition with horses and supplies for their long journey. On the return of the expedition to present-day North Dakota in August 1806, Sakakawea and her husband and infant son returned to live at the Mandan and Hidatsa villages. There has been much debate as to what happened to Sakakawea. It is currently believed that she died of a fever in 1812 at Fort Manuel Lisa, leaving behind an infant daughter, and is buried there.

The lake is spelled Sakakawea, although it is pronounced the same as Sacagawea, the most commonly accepted spelling. Both should be pronounced in the manner of the

Hidatsa, who gave her the name “Sa-cog-a-wee-a”, meaning “Birdwoman”. Russell Reid, Superintendent of the North Dakota Historical Society from 1930 to 1965, chose the “double K” spelling because he felt it followed the linguistic pattern of the Hidatsa. The third common spelling of her name, Sacajawea, is pronounced with a hard J sound. This word is based on the language of the Shoshone, who are believed to be her birth tribe. However, the journals of Lewis and Clark make clear, and most historians agree, that her name was Hidatsa and so should be pronounced in the Hidatsa manner (Borlaug 2007).

Much of the Garrison Dam/Lake Sakakawea project is bounded by the Fort Berthold reservation. The reservation has had a significant impact on the development and use of the project lands and waters. The sparsely populated area is rich in the heritage and culture associated with the Three Affiliated Tribes (Mandan, Hidatsa, and Arikara) and with the West in general.

Surrounding lands are used for agriculture, haying, and grazing. Lake Sakakawea is well known regionally for its cool and cold water fishery.

#### **1.4. AUTHORIZED PROJECT PURPOSES**

The Garrison Dam/Lake Sakakawea project is a unit of the comprehensive plan for development in the Missouri River Basin. The operation of the upper Missouri River’s six main stem reservoirs and the lower Missouri River’s levees and navigation channel provides for flood control, navigation, irrigation, hydropower, municipal and industrial water supply, fish and wildlife, and recreation. The specific project purposes are as follows.

##### **1.4.1. FLOOD CONTROL**

Lake Sakakawea, centrally located in the main stem system, is operated to assist in the control of floods by its flood control storage and temporary surcharge. Main stem dams have prevented over \$30 billion in flood damages (at September 2005 price levels) through September of 2005, of which over \$9 billion can be credited to the Garrison project.

##### **1.4.2. NAVIGATION**

Although navigation on the Missouri River through North Dakota originally opened up this region for settlement, there is no commercial navigation through this reach of the river today. Releases from main stem reservoirs serve navigation downstream from Gavins Point Dam (as well as irrigation, water supply, fish and wildlife, and recreation purposes on the Missouri River reaches below each of the main stem dams).

##### **1.4.3. IRRIGATION**

The Garrison Diversion Unit (GDU) was authorized in 1965, and construction began in 1967. The GDU project was designed to divert Missouri River water to central and eastern North Dakota for irrigation, municipal and industrial water supply, fish and wildlife conservation and development, recreation, flood control, and other project



purposes. The Snake Creek Pumping Plant, McClusky Canal, and New Rockford Canal are completed components of the authorized Principal Supply Works of the GDU. The 1986 Reformulation Act reduced irrigation emphasis of the GDU and increased the emphasis on meeting municipal, rural, and industrial (MR&I) water needs throughout North Dakota. It authorized a Sheyenne River water supply and release feature and water treatment plant. Appraisal level studies were conducted from 1994 to 2000. The Dakota Water Resources Act of 2000 (P.L. 89-108) authorized the Secretary of the Interior to develop irrigation for 13,700 acres in the Turtle Lake service area, 10,000 acres in the McClusky Canal service area, 1,200 acres in the New Rockford Canal service area, 15,200 acres within the boundaries of the Fort Berthold Indian Reservation, and 2,380 acres within the Standing Rock Indian Reservation.

In addition to the above projects, 31 agricultural irrigation water systems have intakes for withdrawing water from Lake Sakakawea.

#### **1.4.4. MUNICIPAL AND INDUSTRIAL WATER SUPPLY**

Intakes for communities on the Fort Berthold Reservation are located at Four Bears, Mandaree, Twin Buttes, and White Shield. The Southwest Pipeline Project provides water to the city of Dickinson along with 27 other communities, 18 bulk users, and 3,089 rural water users in southwest North Dakota (Frink 2007a). The cities of Garrison, Parshall, Pick City and Riverdale, and three industrial water systems also obtain water from Lake Sakakawea or from Garrison Dam's penstocks for municipal and industrial use. When the Northwest Area Water Supply Project is completed, it will provide up to 2 million gallons of Missouri River water per day to at least 63,000 water users (Frink 2007a). In addition, approximately 19 communities / subdivisions and 186 homes located close to the lake have intakes for withdrawing water from Lake Sakakawea for domestic consumption. There are also water intakes for public, domestic, and commercial uses at and downstream from Lake Sakakawea.

In regard to water supply provided by the Garrison Dam/Lake Sakakawea project, the Dakota Water Resources Act of 2000 (P.L. 89-108) shifted the water supply emphasis from irrigation to municipal, rural, and industrial (MR&I) water supply. In accordance with Sections 5 and 8 of P.L. 89-108, the Supplemental Draft Environmental Impact Statement for the Red River Valley Water Supply Project was completed in January 2007 and the comment period ended on April 25, 2007 (Frink 2007a); seven alternatives and a no action alternative were evaluated. The preferred alternative would divert water from Lake Sakakawea via GDU facilities and a pipeline to the Sheyenne River. In June 2007, the Corps' Northwestern Division prepared a study analyzing the potential effects of the three alternatives diverting water from Lake Sakakawea or the Missouri River downstream from Bismarck. The analysis found little difference in the effects of these three alternatives. Because sedimentation will occupy additional storage over the years that results in higher pool levels for any given water storage volume, and because the diversions to northeast North Dakota comprise only a small fraction of total diversions from the Missouri River system (which are expected to increase as the population grows over the years), the diversions to northeast North Dakota would reduce the levels of Lake



Sakakawea by only about 1 foot during a drought similar to the drought of the 1930s (USACE, Northwestern Division 2007).

#### **1.4.5. HYDROPOWER**

The Garrison power plant is operated to help meet peak-load demands for hydroelectric power in the Upper Missouri River basin. All power generated is marketed by the Western Area Power Administration (WAPA). The plant houses five turbine and generator units with a combined generating capacity of 517,750 kilowatts. The generators produce approximately 2.462 billion kilowatt-hours of energy each year. Garrison power generation is integrated with the generation provided from other main stem projects, as well as that generated from other public and private facilities throughout the power marketing area.

#### **1.4.6. FISH AND WILDLIFE**

This project purpose is considered a high priority on all project lands, regardless of the land use classification. All areas classified as Project Operations or Recreation are developed and managed to benefit wildlife through a variety of different techniques, including vegetation management alternatives to enhance and benefit wildlife species. The remaining project lands are also managed to enhance and benefit wildlife species. The Lake Audubon and Lake Sakakawea General Plans, signed by the Corps, the Assistant Secretary for Fish and Wildlife and Parks of the U.S. Department of the Interior; and the North Dakota Game and Fish Department (NDGFD) in 1982 and 1983, identified 26,020 acres at Lake Audubon and 51,000 acres at Lake Sakakawea to be used primarily for the conservation and management of wildlife. These General Plans revised the original General Plan signed in 1955 so that the wildlife management areas in the General Plan would be consistent with those in the 1978 Master Plan.

#### **1.4.7. RECREATION**

Recreational use of project lands is encouraged through public parks and recreation facilities. Main stem projects are managed to provide a high quality outdoor-recreation experience and as much diversity as is practicable. Recreational planning and improvements are supportive of and compatible with the North Dakota Statewide Comprehensive Outdoor Recreation Plan (SCORP). Planning for development and use of recreational facilities is coordinated with Tribal, state, county, municipal, and local non-governmental entities, which lease and manage most of the intensively used recreation areas at Lake Sakakawea.

#### **1.4.8. WATER QUALITY**

Water quality was specified as a project purpose in the authorizing documents in terms of silt control; soil-erosion prevention; pollution abatement; adequate and safe municipal water supplies; improving quality of water for irrigation; provision of water suitable for domestic, sanitary, and industrial purposes; and improving clarity of water for recreation and for fish and wildlife. Silt control was also expected to aid the navigation channel downstream. Water quality in Lake Sakakawea must comply with the State of North Dakota's standards for a Class 1 lake. As such, its water quality has to be suitable for a coldwater fishery, aquatic life, and wildlife; swimming and other water-based recreation;

stock watering; irrigation; and water supply for municipal, domestic, or industrial use after appropriate treatment. The Corps' water quality monitoring program and the lake's water quality characteristics are detailed in the Water Quality section of Chapter 2.

### **1.5. INTEGRATION OF THE PROGRAMMATIC AGREEMENT AND PROGRAMMATIC EA INTO THE MASTER PLAN**

The 2004 Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act, as amended (PA) is an attempt to address all problems associated with cultural and historic resource impacts involved with the ongoing operation and maintenance of the Missouri River system of main stem dams. This document, provided in Appendix F, outlines the processes through which affected Tribes, agencies and interested parties will consult with the Corps of Engineers on issues directly affecting important historic and cultural resources.

The United States Department of Defense recognizes its trust responsibilities to federally recognized Indian Tribes and has established an American Indian and Native Alaskan Trust policy that directs its agencies, including the Corps of Engineers, to work with Tribes in a manner that incorporates Tribal needs, traditional resources, stewardship practices, and the development of viable working relationships. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, outlines policy and criteria establishing regular and meaningful consultation and collaboration with tribal officials in the development of federal policies having tribal implications. It also strengthens the United States' government-to-government relationships with Indian tribes, and reduces the imposition of unfunded mandates upon Indian tribes. Though PA is limited to the application and enforcement of historic preservation and protection laws, it provides the opportunity to develop a dialogue and forum for the various tribes and agencies to begin addressing all resources considered sacred or important. The provisions of the document are outlined in the Cultural Resources section of Chapter 2.

A programmatic EA is integrated into the text of the Master Plan. The EA assesses potential impacts of conceptual development and management activities proposed in the Master Plan and identifies beneficial as well as adverse impacts of the proposed activities. If the potential impact is adverse, a determination is made regarding whether the impact is significant. If the impact is significant, potential methods of avoiding or mitigating the impact are proposed, in preference to mitigating (compensating for) the impact. When conceptual development included in the Master Plan is proposed in detail for implementation, site-specific location drawings and a site-specific EA (tiered under the programmatic EA) are required components of the proposal; depending on the type of development proposed, a market analysis, feasibility study, and other documentation may also be required. The Corps notifies the Tribes of the proposal, and the Tribes have the opportunity for a Consultation on the proposal if they so desire. Conceptual development and management activities proposed in the Master Plan must be in compliance with all applicable environmental laws, regulations, and Executive Orders. The purpose or provisions of each of these laws, regulations, and Executive Orders, along with the status

of and rationale for the Master Plan's compliance with each, are provided in the last section of Chapter 2.

Environmental sustainability is a central theme in the PA and is required of all Corps projects. Documentation of how the Master Plan/EA is in compliance with the seven Environmental Operating Principles is provided in Chapter 8. The Environmental Operating Principles are:

1. Strive to achieve Environmental Sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
2. Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.
3. Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
4. Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
5. Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
6. Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
7. Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the Nation's problems that also protect and enhance the environment.

## **1.6. POST-AUTHORIZATION**

The Garrison Dam/Lake Sakakawea project was constructed from 1947 to 1954 at a cost of \$294 million and included approximately 493,000 acres of land and water. Of this project area, approximately 30,000 acres was riverbed that did not need to be purchased, and approximately 463,000 acres was acquired by the Federal Government. Of the acquired lands, approximately 500 acres was urban and consisted of the towns of Sanish, Van Hook, and Elbowoods. These three towns were all on the Fort Berthold reservation, home to the Three Affiliated Tribes, comprised of the Mandan, Hidatsa and Arikara tribes. New communities were laid out on the prairie to replace villages lost to the river. One, appropriately named New Town, replaced Elbowoods as the reservation's central community.

Approximately 462,500 acres of rural land were acquired: 152,360 acres, constituting over 26 percent of the reservation area; and 310,140 acres outside the reservation. The reservation lands acquired included 20,709 acres of non-irrigated cropland, mostly bottomlands; 90,293 acres of pasture; and 41,358 acres of woodlands. Of the 370 Indian families on the reservation, 289 (78 percent) had to be relocated, and 94 percent of Indian

farms and ranches had to be relocated (BIA 1954; included in Appendix Table 1.1 of Johnson and Goodman 1962). Rural lands acquired outside the reservation included 7,966 acres of irrigated cropland, 148,910 acres of non-irrigated cropland, 106,621 acres of pasture, and 46,643 acres of woodlands (Johnson and Goodman 1962). It was estimated that if not acquired for the Garrison Dam project, 109,172 acres on and off the reservation would have been irrigated using pumping stations, canals, and drains (Johnson and Goodman 1962).

Both Indian and non-Indian farmers and ranchers suffered direct and indirect losses from the Federal Government's land acquisitions. The initial direct loss was the loss of the highly productive bottomlands of a farm or ranch. The loss of bottomlands reduced the size of the farm or ranch, and hence resulted in a loss in income. The loss of bottomlands was of special importance to livestock ranchers because the bottomlands provided the bulk of the winter feed to support the cattle that grazed on the uplands not taken for the reservoir. The farms or ranches were left with only uplands, and farmers/ranchers suffered a number of indirect losses, estimated at 37 percent of the direct losses. Indirect losses involved extra expenses and/or a reduction in net income per acre.

Farmers/ranchers had to either acquire additional upland acres to support the same herd size, reduce herd size, or purchase winter feed. Farmers/ranchers attempting to purchase additional land competed to outbid their neighbors in an inflated seller's market. Farmers/ranchers attempting to readjust to smaller landholdings faced additional or increased costs. They had an increased per-unit cost for marketing a smaller output and paid higher interest rates because smaller farms have lower income stability and higher risks. Efficiency was also reduced because the same labor supply and storage buildings served fewer acres and so were not fully utilized. In addition, farmers/ranchers had additional expenses such as building new fences, moving or building new structures, maintaining buildings that were now larger than needed, and relocating farm service lanes (Johnson and Goodman 1962).

The loss of agricultural lands also had impacts on the economies of the nearby communities. Farmers and ranchers purchased fewer production inputs such as seed, fertilizer, fuel, repairs, and equipment due to the reduction in farmland acres. They also had less income to spend on purchases in the community, such as clothing, restaurant meals, appliances, and automobiles. As business incomes declined, business owners also consumed less, and so on. Due to this "multiplier effect", the total decrease in demand for goods and services in the community was estimated to be nearly 18 percent greater than the direct and indirect income losses to the farmer or rancher. All these losses and lost income from not being able to irrigate 109,172 acres were estimated at nearly \$28 million annually and could be inflated based on increases in price levels and further compounded over time if treated as investments foregone (Johnson and Goodman 1962). In 1978, the annual losses due to acquisition of agricultural lands acquired for the Garrison Dam/Lake Sakakawea project were estimated at \$28.4 million in personal income and \$76.9 million in gross business volume. These estimates assumed that 79,000 of the total irrigable acres along the Missouri River would have been irrigated by 1978 (Leitch and Anderson 1978).

The Garrison Diversion Unit (GDU) was expected to compensate North Dakotans for the loss of over 109,000 irrigable acres. Estimated costs of the GDU increased because of the length of distribution channels required to reach the scattered islands of suitable soil and the expense of thorough drainage works. By 1960, the Bureau of Reclamation estimated that only 250,000 acres could be economically justified for irrigation (Russell 2002). If the 250,000 acres were irrigated, annual increases were estimated to be \$51 million for personal income and \$135 million for gross business volume (Leitch and Anderson 1978). However, 220,000 additional acres would be required for canals, reservoirs, and distribution features. In December 1984, the GDU Commission reduced the proposed irrigated area to 130,940 acres (of which 17,580 acres would be developed on the reservation), which had an estimated cost of nearly \$1.12 billion (Russell 2002). Postponement and reduction of irrigation development caused social effects as well as economic losses (Russell 2002). The Dakota Water Resources Act of 2000 shifted the water supply focus from irrigation to municipal, rural, and industrial (MR&I) water supply, as detailed in sections 1.4.3 and 1.4.4.

In accordance with the Fort Berthold Mineral Restoration Act of 1984, P.L. 98-602, Section 206(b), the Corps is currently in the process of identifying any Garrison project lands within the exterior boundaries of the Fort Berthold reservation that are no longer needed for project purposes and could potentially be transferred to the DOI to be held by the BIA in trust for the Tribes.

## **1.7. PROJECT-WIDE RESOURCE OBJECTIVES**

Corps' Master Plans emphasize stewardship of project resources. Sound stewardship involves the development and management of project resources for the public benefit, consistent with resource capabilities. An important component of this approach is the establishment of viable project-wide resource objectives – long-range goals to guide proposed actions.

Resource objectives are attainable goals for the development, conservation, and management of natural, cultural, and manmade resources at a project. They are guidelines for 1) obtaining maximum public benefits while 2) minimizing adverse impacts to the environment. They are developed in accordance with: 1) authorized project purposes, 2) laws and regulations, 3) resource capabilities and suitabilities, 4) regional needs; 5) other governmental plans/programs, and 6) expressed public interests and desires.

The project-wide resource objectives for Lake Sakakawea, not in priority order, are listed below.

- To give priority to the preservation and improvement of wild land values in public use planning, design, development, and management activities;
- To preserve and protect important paleontological, ecological, and esthetic resources;

- To manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- To maintain a high reservoir water quality for irrigation, water supply, fish and wildlife, and recreation use;
- To maintain high levels of water quality and soil conservation by practices that reduce erosion caused by wind, water, and livestock;
- To provide for wildlife and livestock needs by increasing water availability in upland areas;
- To prevent the introduction of invasive species and aquatic nuisance species (ANS), detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner, monitor invasive species and ANS populations accurately and reliably, and provide for restoration of native species and habitat conditions in ecosystems that have been invaded;
- To manage and develop project lands to accommodate periodic fluctuations in lake elevations with minimum impacts;
- To manage resources in response to sedimentation trends;
- To develop and manage project resources to support types and levels of recreation activities indicated by visitor demand and consistent with carrying capacities and aesthetic, cultural, and ecological values;
- To manage identified recreation lands in ways that enhance benefits to wildlife;
- To provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties;
- To preserve and protect cultural resource sites in compliance with existing federal statutes and regulations;
- To expand public outreach and education about the history of the area, project resources, and the Corps' role in developing and managing these resources;
- To foster stewardship by minimizing encroachments and other non-allowed uses;
- To develop and manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector; and
- To maintain and manage project lands and waters to support regional management programs.

## **2. AFFECTED AREA: FACTORS INFLUENCING RESOURCE MANAGEMENT AND DEVELOPMENT**

### **2.1. GARRISON PROJECT DESCRIPTION AND SETTING**

#### **2.1.1. GARRISON DAM**

Garrison Dam is located on the Missouri River about 75 miles upstream from Bismarck, ND. The dam was constructed as part of the Pick-Sloan Plan for development of the upper Missouri River Basin. Garrison Dam is one of the largest rolled earth-fill dams in the world and is the fifth largest dam in the United States. The dam is 210 feet high and 2.5 miles long. Its embankment consists of 66.5 million yards of rolled earth fill. Construction on the dam began in 1947. Closure of the embankment occurred in April 1953, and earthwork was completed in the fall of 1954.

#### **2.1.2. LAKE SAKAKAWEA**

Garrison Dam impounded Missouri River water, thereby creating Lake Sakakawea. Lake Sakakawea is one of six major reservoirs created on the Missouri River by the Federal Government in an effort to minimize the annual flooding of river lowlands. Lake Sakakawea is located in west-central North Dakota and stretches from Garrison Dam approximately 178 miles upstream, nearly to the Montana border.

Lake Sakakawea is the third largest man-made lake in the United States. The lake covers more than 368,000 surface acres at elevation 1850 feet above mean sea level (msl) and has a shoreline of over 1,500 miles. Lake Sakakawea ranges from 1 to 14 miles wide; the Van Hook Arm is the widest area of the lake. The lake depth in the main channel ranges from 70 to 175 feet, with the deepest portion near Garrison Dam. The maximum capacity is 24,200,000 acre-feet below elevation 1854.0 feet msl, which is at the top of 29-foot tall radial spillway gates. Elevation of the crest of the spillway is 1825.0 feet msl. Inactive storage is 5,000,000 acre-feet below elevation 1775.0 feet msl. The Snake Creek arm of the reservoir (Lake Audubon) has connecting gates to the main reservoir, with the sill at elevation 1810 feet msl.

About 55,000 surface acres of Lake Sakakawea and about 600 miles of its shoreline are included within the boundaries of the Fort Berthold Reservation. The Fort Berthold Reservation is located in western North Dakota and occupies sections of six counties: Mountrail, McLean, Dunn, McKenzie, Mercer, and Ward.

Fishing (including boat, shore, and ice fishing) is the most popular recreational activity on Lake Sakakawea. However, ice fishing in the upper part of Lake Sakakawea is restricted during times of low pool levels because the near-shore area is too shallow for good fishing. Other water sports include motorized boating, waterskiing, sailing, wind surfing, and swimming.

#### **2.1.3. PROJECT LANDS**

The land area surrounding the lake includes woody draws and most seeded grasslands on the east side of the reservoir transitioning into rolling grasslands towards the west. Prior to the filling of the reservoir, the Missouri River flood plain was covered by large stands

of trees. Today, snags that are both above and below the water surface are present in the lake. These snags can be a problem for boaters and are the source of large quantities of driftwood found along the shore of Lake Sakakawea.

Recreation activities on project lands include (but are not limited to) hunting, camping, picnicking, hiking, mountain biking, horseback riding, bird watching, wildlife observation, interpretive activities, photography, winter sports, and sightseeing.

#### **2.1.4. SURROUNDING AREAS**

Most of the area in the vicinity of the Garrison Dam/Lake Sakakawea project is devoted to farming or ranching. Because of the proximity of the lake, a number of small housing subdivisions with a large proportion of seasonal residents have developed adjacent to project lands. In addition, a number of small and medium-sized towns are located near the project. Some of these towns depend on Lake Sakakawea as a source of water, and all of them have businesses whose customers include visitors to Lake Sakakawea.

### **2.2. LAND ACCESSIBILITY**

#### **2.2.1. HIGHWAY ACCESS: GENERAL PROBLEMS AND OPPORTUNITIES**

Access by motor vehicle between the north and south sides of Lake Sakakawea is possible by three routes. At the lake's eastern end, US Highway 83 runs along the crest of the embankment separating Lake Sakakawea from Lake Audubon. North Dakota (ND) Highway 23 runs over the Four Bears Bridge at New Town, about two-thirds of the way from the dam to the upstream end of the lake. U.S. Highway 85 crosses Lake Sakakawea west of Williston, at the upstream end of the lake. With so few bridge crossings, visitors and residents alike might have to drive up to 100 miles to get from one side of the lake to the other by road.

#### **2.2.2. VEHICULAR ACCESS TO RECREATION AREAS**

Road access to recreation areas is generally provided by paved state highways to within a few to 20 miles of the recreation area, and then by county or Bureau of Indian Affairs (BIA) roads, which may be paved or gravel. ND Highway 23/37/1804 carries much visitor traffic on the north side of Lake Sakakawea, and ND Highway 22/200/1806 carries much of the visitor traffic on the south side of the lake. Only about half of the recreation areas classified for intensive use are accessed directly by paved roads; most of the other recreation areas are accessed by gravel roads. Recreation areas classified for low-density use are usually accessed by gravel roads, but some are accessed by dirt roads. During times of low lake levels, relocation of some boat ramps necessitates relocating the access road to the recreation area and/or ramp. In these cases, the surface of the new road and/or parking areas may differ from what the visitors were previously accustomed to.

#### **2.2.3. VEHICULAR ACCESS TO WILDLIFE MANAGEMENT AREAS**

Most wildlife management areas are accessed by gravel or dirt roads. To reduce disturbance to wildlife, vehicular entrances to wildlife management areas are limited, and there may be many areas that are closed to vehicles. Closure to vehicles improves the habitat for wildlife, resulting in an increase in quality of both hunting experiences and



wildlife-based activities such as bird watching, nature observation, hiking, and photography.

#### **2.2.4. VEHICULAR ACCESS TO SHORELINE AREAS**

It is the policy of the Chief of Engineers to protect and manage shorelines of all Civil Works water resource development projects under Corps of Engineers jurisdiction in a manner that will promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. As such, access routes to the shoreline are managed and controlled so as to prevent unnecessary damage to the land and the environment. As directed by Title 36, Chapter III Part 327 Rules and Regulations Governing public use of Water Resource Development Projects Administered by the Chief of Engineers, “the operations and/or parking of a vehicle off authorized roadways is prohibited except at locations and times designated by the District Commander”.

Shoreline access areas are classified as recreation low-density use. During drought conditions in 2005, in an attempt to accommodate shoreline anglers and day-use recreation, the Corps implemented a shoreline access policy designating 15 (of 46) areas that permitted lakeshore access for street-legal vehicles. Designation for vehicle shoreline access was based on several factors, including cultural resources, the presence of threatened and endangered species, and safety. A major problem with driving on the shoreline is the exposed lakebed, or substrate. Much of the exposed lakebed is silt, so vehicles can easily get stuck. The list of designated vehicular (and pedestrian) shoreline access sites is updated periodically as conditions change. The shoreline access policy and designated shoreline access sites can be found at the following Web site:  
[https://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/shorelineAccessPolicy.pdf](https://www.nwo.usace.army.mil/html/Lake_Proj/garrison/shorelineAccessPolicy.pdf).

#### **2.2.5. TRIBAL ACCESS TO TRADITIONAL CULTURAL PROPERTIES**

Tribal access to traditional cultural properties, which include spiritual sites, sacred sites, and sites of tribal importance which may not have religious significance, is approved on project lands. Memorandum from the Corps’ Northwestern Division dated June 7, 2004, Subject: Use of Corps Lands by Federally Recognized Tribal Members in the Northwestern Division provides guidance for Tribal religious activities. Cultural site integrity and protection are a major concern. This memorandum guidance provides procedures and notification protocol that assists land managers with site protection, as well as monitoring and investigation of illegal activity.

### **2.3. CLIMATE**

Climatic conditions in the Lake Sakakawea area are marked by distinct seasonal changes. Summers are hot. Winters are often long and cold with occasional severe blizzards. The area has a strong continental climate. The mountains to the west block cool, moist Pacific Ocean air masses from moving eastward. However, there are no barriers to the north or south. Consequently cold, dry air masses originating in the far north flow over the area in the winter; warm, humid air masses originating in tropical regions flow over the area in the summer. Movement of these air masses and their associated fronts causes

nearly continuous wind and often results in large day-to-day temperature fluctuations in all seasons (Enz 2003). Temperature, precipitation, and wind conditions may affect the timing and duration of many resource management and recreation activities and the location and availability of various recreation facilities and activities.

### 2.3.1. TEMPERATURE

The frost-free growing season averages only 140 days. Daylight hours are long in both spring and summer (Jensen 1998). Summer temperatures near 100° Fahrenheit (F) are not uncommon, and clear to partly cloudy days occur with 75 percent frequency during this season. Mean annual temperatures and mean temperatures in January (the coldest month), April, July (the warmest month), and October during the 1971-2000 period for a number of cities in the Lake Sakakawea area are provided in table 2.3.1.

**Table 2.3.1. Mean temperatures (degrees Fahrenheit) during the 1971-2000 period in January, April, July, October, and annually for various cities near Lake Sakakawea.**

Location	January	April	July	October	Annual
Beulah	11.0	43.7	69.8	45.8	42.6
Bismarck (Airport)	10.2	43.3	70.4	45.2	42.3
Dickinson (Airport)	14.2	42.8	69.4	45.3	42.9
Dunn Center	12.8	44.0	70.2	45.9	43.2
Garrison	7.5	41.5	68.2	43.4	40.3
Minot (Airport)	9.8	42.8	69.6	44.7	41.6
Stanley	5.7	39.4	66.4	41.3	38.2
Underwood	7.1	41.5	69.2	43.7	40.3
Washburn	9.7	43.2	70.0	45.5	42.1
Watford City	8.2	41.3	68.6	43.1	40.5
Williston (Airport)	8.0	42.5	69.3	43.6	40.9

Source: National Climatic Data Center, 2002. Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1971-2000: North Dakota.

The average annual temperature range (difference between July and January average temperatures) in the Lake Sakakawea area is very large, about 60° F. It clearly illustrates the pronounced continental climate of the area (Enz 2003).

Winter temperatures are extremely variable. Cold spells with temperatures remaining below 0° F for several days are not unusual when Arctic air masses combine with widespread snow cover (Enz 2003). For example, temperatures below 0° F occur about 47 days per year at Bismarck and about 49 days per year at Williston (National Climatic Data Center 1999). When snow cover is light, however, air masses from the west or south can produce winter temperatures in the 40's and 50's (Enz 2003).

Lake Sakakawea usually freezes over by mid-December and remains frozen into April, although warm "Chinook winds" and "January thaws" sometimes clear the ice from more exposed areas earlier. Ice thickness at some locations often exceeds 2 feet. Huge ice jams were a perennial occurrence on the river in the project area before impoundment,

and ice action on the lake still causes a problem by scouring the shoreline during spring breakup (Jensen 1998).

The cold winters result in good outdoor recreation opportunities for ice fishing, cross-country skiing, and other winter sports. However, the cold temperatures make it necessary to shut off water service to flush toilets and other water-using facilities for much of the year to avoid water freezing in the pipes. As a result, developed campgrounds are open at Lake Sakakawea for a much shorter period of time than is the case in many other areas of the United States. Boating activities other than boat-fishing occur mainly between May and September, limiting the period of time during the year that marinas and marina concession facilities remain open.

### **2.3.2. PRECIPITATION**

During the cooler three-fourths of the year and particularly during the spring, brief periods of bright days and cold temperatures alternate with blustery storms of rain or snow as large air masses of high and low pressure pass in procession over the region. Sharply contrasting weather fronts and strong winds often occur in the pressure gradients between air masses (Jensen 1998). Annual snowfall is only about 38 inches in Williston and 43 inches in Bismarck (National Climatic Data Center 1999). On average, one inch of rain is equivalent to approximately 10 inches of fresh snow; however, this may vary from about 5 to 15 or more inches of fresh snow depending on the moisture content and air temperatures in the storm system (Langerud 2006). Blizzard conditions can bring zero visibility and snowdrifts several feet deep, even when total snowfall for a storm may amount to only a few inches (Jensen 1998).

During the summer, short-lived and fast moving thunderstorms produce much of the year's precipitation. On average, it rains on one out of every 3 or 4 days during the summer (Enz 2003). Thunderstorms occur about 34 days per year at Bismarck and about 50 days per year at Williston (National Climatic Data Center 1999). Total annual precipitation ranges between 14 and 20 inches in the Lake Sakakawea area, as seen in table 2.3.2.

The number of days with hail in the Lake Sakakawea area is estimated to range from 40 to 60 days (Chagnon 1952; Langerud 2006). July is the major hail month in ND, as it is for most states in the upper Great Plains, followed by June and then August (Jensen 1998). Hail occurrences in ND are reported by the all-volunteer Cooperative Observer Network. Within an area experiencing a thunderstorm, hail falls with great variability, and many hailstorms occur in areas where there are no observers. Hail occurrences reported through August 25, 2006, in the six counties contiguous to Lake Sakakawea are provided in table 2.3.3.

**Table 2.3.2. Mean precipitation (total in inches) during the 1971-2000 period, in each quarter of the year and annually, for various cities in the Lake Sakakawea area.**

Location	Jan-Mar	Apr-Jun	July-Sep	Oct-Dec	Annual
Beulah	1.46	7.22	5.48	2.43	16.59
Bismarck (Airport)	1.81	6.27	6.34	2.42	16.84
Dickinson (Airport)	1.49	7.61	5.24	2.27	16.61
Dunn Center	1.49	7.08	5.42	2.37	16.36
Garrison	1.38	6.49	5.97	2.18	16.02
Minot (Airport)	2.23	7.01	6.39	2.81	18.44
Stanley	1.93	8.05	7.22	2.53	19.73
Underwood	1.78	7.41	5.84	2.74	17.77
Washburn	1.68	7.18	6.41	2.53	17.80
Watford City	1.40	6.22	4.96	1.83	14.41
Williston (Airport)	1.67	5.29	5.11	2.09	14.16
Avg. % of Annual	10%	41%	35%	14%	100%

Source: National Climatic Data Center, 2002. Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1971-2000: North Dakota.

**Table 2.3.3. Number of Days of Hail Reported Annually by the Cooperative Observer Network for the Six Counties Adjacent to Lake Sakakawea through August 25, 2006.**

COUNTY	REPORTING PERIOD	OBSERVERS ACTIVE 2006	SQ. MI./ OBSERVER	MEAN $\pm$ SD DAYS /YR.	MINIMUM DAYS/YEAR	MAXIMUM DAYS/YEAR
Dunn	1977-2006	16	126	4.4 $\pm$ 3.9	0	14
McKenzie	1977-2006	26	105	9.5 $\pm$ 6.5	1	31
McLean	1978-2006	21	100	5.3 $\pm$ 2.9	0	12
Mercer	1977-2006	11	95	4.0 $\pm$ 2.1	1	10
Mountrail	1978-2006	18	101	5.4 $\pm$ 3.2	1	17
Williams	1977-2006	20	104	2.9 $\pm$ 2.2	0	8

Source: ND State Water Commission, Atmospheric Research Program. 2006. Cooperative Observer Network: Hail Observations, 1977-2006.

The frequency with which rain and/or hail occur, especially during the summer when visitors to Lake Sakakawea are most numerous, may affect recreation facility designs and needs. For example, picnic shelters shield picnickers from rain and hail as well as provide shade, resulting in a more enjoyable recreation experience compared to uncovered picnic tables. Picnic shelters are among the development needs itemized for a number of recreation areas in Chapter 7, Resource Plan.

According to the Corps' Missouri River Basin Reservoir Control Center, variability in weather patterns, especially precipitation patterns, is characteristic of the climate in the

upper Missouri River basin (above Sioux City, Iowa). This variability affects the amount of water flowing through the Missouri River mainstem reservoir system (including Lake Sakakawea) through effects on three factors: plains snowpack; mountain snowpack; and rainfall. When rainfall occurs at the same time as melting of the snowpack, the proportion of the snowmelt that goes into the Missouri River (and its mainstem reservoirs) increases. If the three factors taken together average above normal, Missouri River flows and lake elevations tend to increase. If the three factors taken together average below normal, Missouri River flows and lake elevations tend to decrease. If the three factors average below normal for several years in succession, lake levels may decrease significantly. Since 1898, there have been four periods of extended drought in the upper Missouri River basin, when all three factors have averaged below normal: the “Dust Bowl” of the 1930s, 1930-1941 (the most severe of the droughts); the drought of the 1950s, 1954-1961; the drought of the late 1980s, 1987-1992; and the current drought, 2000-present (USACE, Northwestern Division, 2006, figure 4).

Drought is a normal part of the long-term hydrologic cycle, complementing long-term wet periods and associated flooding. During drought, atmospheric water vapor is reduced, resulting in lower precipitation and reduced cloud cover. Because water vapor provides a buffer against temperature extremes, the lowering of atmospheric water vapor results in a greater tendency for temperature extremes. Higher temperatures and lower atmospheric water vapor increases evaporation and plant evapotranspiration, thereby reducing soil and surface moisture, which are needed for groundwater recharge. The decreased precipitation fails to fully restore this soil moisture. Eventually, these conditions act together to result in lower stream flows, lake levels, and groundwater levels. Droughts vary by intensity, duration, and the distribution of areas within the region that are most affected. Feedback mechanisms can act to begin and end droughts. A short period of very hot and dry conditions may dry soils enough to cause drought conditions to develop. On the other hand, a brief, heavy rain can increase soil moisture enough to fuel the development of additional rainfall, which may result in ending some droughts. Recovery from drought requires excessive precipitation during seasons that are normally relatively dry, coupled with at least normal precipitation during seasons that are normally relatively wet, that restores soil moisture and recharges groundwater. It has been found that 10- and 20-year precipitation fluctuations occur across the Great Plains, with strong fluctuations tending to occur during the summer months (Meridian Environmental Technology Inc. 2004).

Drought reduces the runoff into the lake. As lake levels fall, the exposed lakebed provides good nesting habitat for interior least terns and piping plovers, which are Federally Listed as Endangered and Threatened, respectively. However, these newly emerged areas also attract noxious weeds and may expose previously inundated cultural resources. Low lake levels also reduce the number of intakes that remain able to supply water for municipal and rural systems, industrial uses, irrigation, and power plants. Falling lake levels, as well as rising lake levels, affect wildlife, visitor activities, recreation facilities, other project resources, and resource management activities. These impacts, and responses to potentially reduce these effects, are discussed in Chapter 3.

#### 2.3.4. WIND

Prevailing winds occur out of the west to northwest and average around 11 miles per hour. During the recreation season, May through August, winds commonly occur from the east and south. The average wind speed in the Lake Sakakawea area is greatest in April and May. Prevailing winds blow most often from the west-northwest at Bismarck and from the southeast or southwest at Williston, as seen in table 2.3.4.

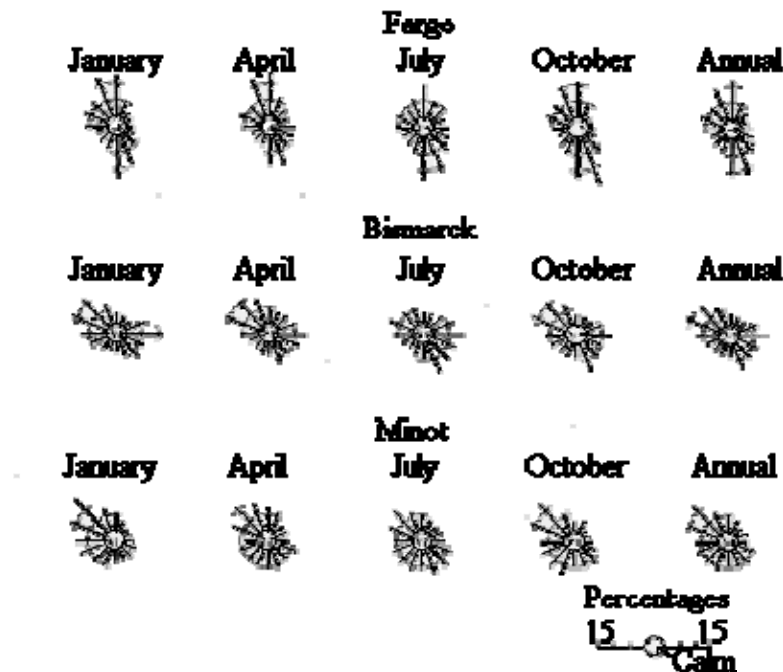
**Table 2.3.4. Monthly average wind speed, prevailing wind directions, and extreme wind speed for Bismarck and Williston, North Dakota, as recorded by the National Oceanic and Atmospheric Administration (NOAA).**

Month	Bismarck			Williston		
	Average Miles/Hr.	Prevailing Direction	Fastest Mile/Hr.	Average Miles/Hr.	Prevailing Direction	Fastest Mile/Hr.
January	10.2	WNW	54	9.9	W	70
February	10.2	WNW	54	9.1	NE	66
March	11.4	WNW	65	10.1	NW	52
April	12.8	WNW	63	11.4	SE	56
May	12.5	SSE	66	11.9	SE	56
June	11.3	WNW	66	9.7	SE	61
July	9.8	SSE	72	9.1	SE	64
August	10.0	E	72	10.1	SW	47
September	10.5	WNW	66	10.1	SW	50
October	10.4	WNW	61	10.0	SW	57
November	10.6	WNW	67	9.2	SW	47
December	9.8	WNW	61	9.7	SW	56
Year	10.8	WNW	72	10.0	SW	70
Years of Record	30	14	30	5	3	8

Source: Jensen 1998, Climate of North Dakota, table 12. Available at <http://www.npwr.usgs.gov/resource/habitat/climate/wind.htm>.

The fastest wind speeds registered over a one-minute period were about the same in winter as in summer. This indicates that winter cold fronts and low-pressure systems can produce winds of about the same speed as those associated with summer thunderstorms. However, high winds in winter can be sustained over a period of several hours, and in rare cases 2 to 3 days, while in summer the duration of strong winds is usually about a few minutes (Jensen 1998). In figure 2.3.1, wind roses show the percentage of time that the winds blow from 16 compass points at Fargo, Bismarck and Minot. The five wind roses for each station cover the four seasons and an annual composite.

**Figure 2.3.1. Wind roses for Fargo, Bismarck, and Minot, North Dakota.**



Source: Jensen, 1998, figure 52, available at:  
<http://www.npwrc.usgs.gov/resource/habitat/climate/figlist.htm>.

High winds can generate waves that, due to the configuration of Lake Sakakawea, may have long fetch lengths and result in shoreline erosion. High winds and their prevailing direction must also be considered in locating boat ramps and marina facilities, which are often in protected areas in embayments.

Severe thunderstorms with outflow winds strong enough to cause widespread property and tree damage leave their signature at many places about the state every year. Windstorm reports are based almost entirely on damage to property, but in most areas of ND the potential for wind damage is small because of the sparsely settled countryside. Therefore, many windstorms go unreported, whereas it is believed that nearly all tornadoes are reported because of their spectacular nature (Jensen 1998). Sudden storms with high winds in the summer can be a hazard for boaters.

## **2.4. TOPOGRAPHY, GEOLOGY, AND MINERAL RESOURCES**

### **2.4.1. TOPOGRAPHY**

The terrain near Lake Sakakawea is largely an open, expansive stream-dissected prairie. Geologic events associated with the ice age are largely responsible for the present terrain and drainage in the project area.

Garrison Dam impounded the Missouri River, inundating the valley nearly 200 miles upstream. Lake Sakakawea is long and sinuous, and its shoreline is highly serrated due to the inundation of valleys of streams tributary to the Missouri River.

Rugged topography due to stream downcutting (dissection) is most extensive near Lake Sakakawea and to the southwest, particularly along the Little Missouri River valley. Here, elevations often differ by more than 800 feet within a few miles, in areas where buttes, badlands, and large coulees (drainageways) formed during and following several Pleistocene (ice age) glacial advances.

During the Pleistocene, several rivers in the project area that used to flow to Hudson Bay were blocked by glaciation at several locations, forming lakes. Overflows from these lakes were diverted to the southeast and formed channels where the Missouri River, the lower portion of the Little Missouri River, and the Knife River now flow. Evidence for the pre-Pleistocene drainage towards the northeast includes washed and sorted sands and gravel in the old river beds, now buried beneath glacial drift. This buried sand and gravel serve as aquifers that supply substantial quantities of hard but generally usable water. The channels and glacial moraines are also important sources of sand and gravel.

During the ice age, the Missouri River flowed into what is now the Van Hook Arm at New Town until it was blocked by glacial ice and debris about 15,000 years ago. The dammed Missouri River formed a lake west of the present Four Bears Bridge. Silt deposited on the bed of this lake can be seen in the shoreline bluffs three-fourths of a mile north of Four Bears Bridge. In time, the lake overflowed its lowest divide and cut the present channel south of the bridge. This channel is the youngest, narrowest, and most rugged section of the Missouri River in the project area.

The old Little Missouri River channel is a valley extending north past Watford City to Lake Sakakawea west of Charlson. Glacial ice diverted the river near the petrified forest southwest of the Theodore Roosevelt National Memorial Park, North Unit. This change caused erosive downcutting of the Little Missouri River, resulting in large areas of rugged topography and badlands.

About 13,000 years ago, during glacial retreat, some blocks of ice were covered with layers of pebbly, sandy, silty clay known as glacial till. This material insulated the glacial ice, allowing some ice to persist for another several thousand years. Ice melted where the material on top was the thinnest, leaving depressions that were filled with water. Silt and clay deposited in the bottom of these lakes formed flat, boulder-free plains with fertile, well-drained soils that are now important for agriculture, primarily north and east of Lake Sakakawea.

In other areas, torrents of sediment-choked meltwater flowed from the retreating ice front into the Missouri River through flat, oversized valleys now occupied by Shell Creek, which flows into the Van Hook Arm from the north, and the Little Muddy River, which flows into Lake Sakakawea at Williston.

When the last of the buried glacial ice melted out, it left a broad belt, hundreds of miles long, containing depressions. These depressions are now occupied by thousands of kettle lakes (most of which are intermittent) and sloughs. The extreme downstream end of



Lake Sakakawea extends into this belt of lakes. Much of this lake belt is atop the Missouri Coteau. The Missouri Coteau is a broad, irregularly contoured, moraine-covered drainage divide that is flanked by an extensive but gentle northeast-facing Missouri Escarpment.

#### **2.4.2. GEOLOGY**

Poorly consolidated sediments and lignite (soft coal) beds of the Tertiary-age Fort Union Formation characterize the geology of the entire Lake Sakakawea project area. The Fort Union Formation supports all Garrison Dam structures. Bedrock at the site is the Tongue River Member of the Fort Union Formation. The Fort Union Formation mainly consists of alternating beds of moderately to well compacted, gray to brown, stiff to hard clay shale, with moderately to well compacted silt and fine sand, and numerous lignite beds. The lignite beds are jointed and frequently contain water. The bedding ranges from very thin to more than 15 feet thick. Thin limestone and sandstone beds and/or concretions occur infrequently. The bedrock at the dam site is essentially flat lying with a slight regional dip toward the west. No evidence exists for deep-seated faults in the area. Overlying the Fort Union Formation are Pleistocene glacial till and alluvial deposits (sands, gravels, and alluvial clays) that are about 100 feet thick in the channel and about 50 feet thick at the abutments.

Bedrock beneath the Pleistocene glacial till and alluvium has been exposed in many sections of the project area, especially where stream dissection has been extensive. The oldest bedrock outcrops consist of the Cannonball-Ludlow, Tongue River, and Sentinel Butte Members of the Paleocene Fort Union Formation.

Wherever the Sentinel Butte and Tongue River Members are exposed, petrified stumps of giant cedar, redwood, and sequoia trees that grew in dense forests along coastal swamps can be found. At one time a maritime climate supported an abundance of these trees in this region. Beds of clay and siltstone that are associated with seams of lignite in these formations contain fossils of approximately 400 species of plants and many different snails. The brightly colored beds of clay and siltstone (clinker) and the beds of ash-derived clay, resulted from the burning of lignite that was exposed by erosion and ignited by spontaneous combustion or range fires.

The unconsolidated, predominantly silty, sandy clays of the Fort Union Formation and overlying thin layer of glacial till and alluvial material are subject to severe shoreline erosion. Lake level fluctuations increase beach erosion. Sediments deposited offshore when water levels are high tend to be resuspended and redistributed when water levels are low. In addition, extended periods of water level fluctuation alternately drown and desiccate beach-stabilizing plant species. In many locations, rapid erosion of shoreline promontories results in vertical wave-cut cliffs. Most of the sediment is deposited in deeper or quieter areas of the lake, but baymouth bars are developed by longshore drift.

Because the Fort Union Formation and the overlying glacial till and alluvium are so highly erodible, when packed snow in gullies melts, it saturates, dissociates, and collapses the unconsolidated sediment out from under any vegetative cap that may exist.

This collapse is increased by frost action. Clumps of soil and turf then slough off into the gully and are washed away later by surface runoff. This process is often initiated by piping, which is the process by which water percolating through the soil dissolves and carries away soil particles. Piping results in fissure-like channels in and beneath several feet of silt-clay soils and sediments. Rainfall-generated gully erosion also probably delivers sediment down pre-existing gullies into embayments. Because of such erosional mechanisms, unstable slopes created along Lake Sakakawea's shoreline may not stabilize for many years and may continue to erode back through adjacent land in the more actively eroding areas.

#### **2.4.3. MINERAL RESOURCES**

Sand and gravel are extracted from glacial moraines and from pre-Pleistocene river beds buried beneath glacial drift. Several areas adjacent to the project boundary have been strip mined for gravel, which is often locally referred to as "scoria". No sand or gravel is actively commercially mined on Corps public lands. Several requests for commercial mining activities have been received but have been refused by the Corps based on potential environmental impacts.

The Fort Union material includes several seams of lignite that has resulted in surface coal mining (strip mining) near Lake Sakakawea project lands. Total lignite reserves are estimated to be in the billions of tons in McLean County alone. At least two of the coal seams are over 10 feet thick and are mined at several locations in the vicinity. The Falkirk Mine, located east and west of US Highway 83, south of Underwood, in McLean County, won a National Excellence in Surface Coal Mining Reclamation Award in 1986, 1994, and 2002 and the North Dakota Award for Excellence in Surface Mining and Reclamation in 2004. The Freedom Mine is located north of Beulah and Hazen, in Mercer County, and won a National Excellence in Surface Coal Mining Reclamation Award in 1992, 1997, 2001, and 2004 and the North Dakota Award for Excellence in Surface Mining and Reclamation in 1996, 1998, and 2001. The Beulah Mine is located 3 miles south of Beulah, east and west of ND Highway 49, in Mercer and Oliver counties. The Geo-Resources Mine is located 3 miles east of Williston on ND Highway 1804, and one of its old pits is being used by the City of Williston as a sanitary landfill (Deutsch 2006; ND Public Service Commission 2006; Office of Surface Mining 2006).

No coal is actively mined on Lake Sakakawea project lands. However, several layers of lignite, in some cases 2 feet thick or more, are exposed by beach erosion, especially along the southern and eastern portions of the Lake Sakakawea shoreline. Land owned by Coteau Properties Company, which owns and operates the Freedom mine, extends to the boundaries of the Lake Sakakawea project in Sections 16 and 22, T146N, R88W, near the southeast end of Beaver Creek Bay. Surface coal mining in Section 16 to within 1/4 mile from the project boundary and in Section 22 to within 5/8 mile from the project boundary is scheduled to take place during 2006 through 2008. The bottom of the coal pit is expected to be approximately 1920 feet above mean sea level, 66 feet above the maximum normal operating pool of Lake Sakakawea, so there will be no direct hydraulic connection. Sediment ponds that catch runoff from the area being mined are located within 1/4 mile and 3/8 mile from the project boundary in Sections 16 and 22,

respectively. An all-weather compacted gravel road for transporting the coal has been developed on the east side of the mining areas, at least 1/2 to 1 mile away from the project boundary. Reclamation of the lands to return them to their pre-mining state is scheduled to be completed during the 2010-2012 period, and the sediment ponds will be removed when they are no longer needed (Friedlander 2006).

Sedimentary materials as old as the Cambrian period lie beneath the Fort Union group. These sedimentary materials extend to a depth of nearly 3 miles in the area of the Killdeer Mountains and represent several periods of shallow marine and continental sediment infill materials into the Williston Basin. Although a few water wells extend into these sedimentary materials, they are of great economic importance because oil wells extend into their Paleozoic formations. Oil found in the Williston Basin is a high quality "light" crude and constitutes a significant resource within the region. Natural gas is also recovered at some localities. Many of the oil wells in the project area are associated with the Nesson Anticline, a gentle subterranean crustal flexure extending from Williams County and western Mountrail County generally southward into McKenzie and Dunn counties. Oil and natural gas are extracted on Lake Sakakawea project lands. In August 2006, there were 46 active oil wells on project lands. Oil and gas leases are discussed further in the Real Estate section of Chapter 2.

## **2.5. SOILS**

### **2.5.1. SOIL FORMATION**

Soil is developed by the action of soil-forming processes on parent material that was deposited or accumulated by geologic forces. The characteristics of the soil at any given point are determined by: (1) the physical and mineral composition of the parent material; (2) the relief or topography of the land; (3) the climate under which the soil material accumulated and weathered; (4) the plant life on and in the soil; and (5) the length of time the forces of soil development have acted on the soil material.

Based on the soil characteristics listed above, the following factors have influenced the development of the soils around the project area. Soil in this region has been forming since the last glacier receded approximately 10,000 years ago. Residue was left from the last glacial period in the form of glacial till, outwash plains, alluvium, loess materials, or weathered bedrock. Topography is generally gently rolling to steep, with the steepest slopes along rivers. Soils were developed in a semiarid to subhumid, continental climate with hot summers, cold winters, and modest precipitation. The original vegetation was mostly short-grass prairie with trees in bottomlands along streams and rivers. Within the last 150 years, however, human activities have had a major impact on the soil by increasing erosion caused by water and wind.

### **2.5.2. SOIL CHARACTERISTICS**

The Natural Resources Conservation Service (NRCS) has mapped the soils in each of the six counties around Lake Sakakawea. These NRCS soil surveys should be consulted for specific soils information at individual sites. Soils with similar profiles are classified as belonging to the same soil series. Soil associations are formed by two or more soil series

that are geographically associated in a characteristic pattern. The soil associations found within the Garrison Dam/Lake Sakakawea project area are described in table 2.5.1.

Generally, the soils around the lake fall into three major categories. The eastern approximately one-third of the lake has deep soils that are predominantly formed on glacial till and are gently rolling to steep. The slope percentage is the major restriction for any proposed land use.

The central approximately 50 percent of the lake area has shallow soils developed on weathered soft bedrock materials that are shallow and steep. The land uses on these soils are restricted by slope, soil depth, and lack of moisture because of rapid run-off. Within this category, small areas exist where fairly level and deep soils are formed on terraces, bottomlands, and outwash plains. These areas allow more intense land use than the major category would withstand.

The third major category is deep, level, soils formed on bottomland. This is mainly found at the western tip of the lake and the major restriction on land use is occasional, brief flooding.

**Table 2.5.1. Soil Associations of the Garrison Dam/ Lake Sakakawea Project and their general characteristics, based on USDA county soil surveys. Counties where each soil association is found are shown in parentheses.**

<b>SOILS FORMED ON GLACIAL TILL AREAS</b>
<b>Williams-Bowbells Association</b> (McLean), <b>Williams-Zahl Association</b> (Mountrail & Williams), <b>Williams-Wilton-Temvik</b> (Mercer): Deep, nearly level to gently rolling, well and moderately well drained, medium texture and moderately fine textured soils.
<b>Zahl-Williams Association</b> (Mountrail & McKenzie): Deep, medium texture, gently rolling to hilly, well drained soils.
<b>SOILS FORMED ON SHALLOW TILL AND WEATHERED BEDROCK</b>
<b>Zahl-Cabba Association</b> (McLean & McKenzie), <b>Williams-Cabba-Zahl Association</b> (Dunn), <b>Zahl-Williams-Cabba Association</b> (Williams), <b>Cabba-Williams-Temvik</b> (Mercer): Deep to shallow, moderately steep and steep, well drained, medium textured soils on glaciated soft shale uplands.
<b>Cabba-Zahl-Shambo Association</b> (Mountrail), <b>Cabba-Cohagen-Rhodes Association</b> (Dunn & McKenzie), <b>Cabba-Cohagen</b> (Mercer): Shallow and deep, medium and moderately fine textured, moderately sloping to very steep, well-drained soils.
<b>Cabba-Badland Association</b> (Mountrail, Williams, McKenzie & Dunn): Well-drained, shallow and deep, medium texture and moderately fine textured soils.
<b>SOILS FORMED ON BOTTOMLAND</b>
<b>Havrelon-Bank-Lohler Association</b> (McLean), <b>Havrelon-Lohler Association</b> (Williams & Mercer), <b>Farland-Havrelon-Savage Association</b> (Williams): Deep, nearly level, moderately well drained to somewhat excessively drained, fine to medium textured and coarse textured soils.
<b>SOILS FORMED ON TERRACES WITH VARIOUS MATERIALS</b>
<b>Wilton-Williams-Mandan and Mandan Associations</b> (McLean): Deep, nearly level to rolling, well drained, medium textured and moderately fine textured soils.
<b>Manning-Lavona-Lihen Association</b> (Mountrail): Deep, moderately coarse textured and coarse textured, nearly level to moderately sloping, somewhat excessively drained and well-drained soils.
<b>Wabak-Lehr Association</b> (Mountrail) <b>Appam-Wabak Association</b> (Williams): Deep, medium textured, nearly level to steep, Excessively drained to somewhat excessively drained soils.
<b>Morton-Rhodes-Savage Association</b> (Dunn): Well drained and moderately well drained, moderately deep and deep, medium texture and moderately fine textured soils formed in material weathered from shale and siltstone or which formed in alluvium.

### 2.5.3 PRIME FARMLAND AND STATEWIDE IMPORTANT SOILS

This is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water

supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding (NRCS 1993). Coordination with the NRCS is necessary when implementing management plans or development projects that involve prime farmland.

Farmland of statewide importance, or of local importance, is land other than prime farmland or unique farmland but that is also highly productive. Criteria for defining and delineating these lands are determined by the appropriate state or local agencies in cooperation with USDA. The significant difference is that although the criteria is not appropriate outside the state or local area, that these lands approach the productivity of lands in their area which meet criteria for prime farmland and unique farmland (NRCS 2005).

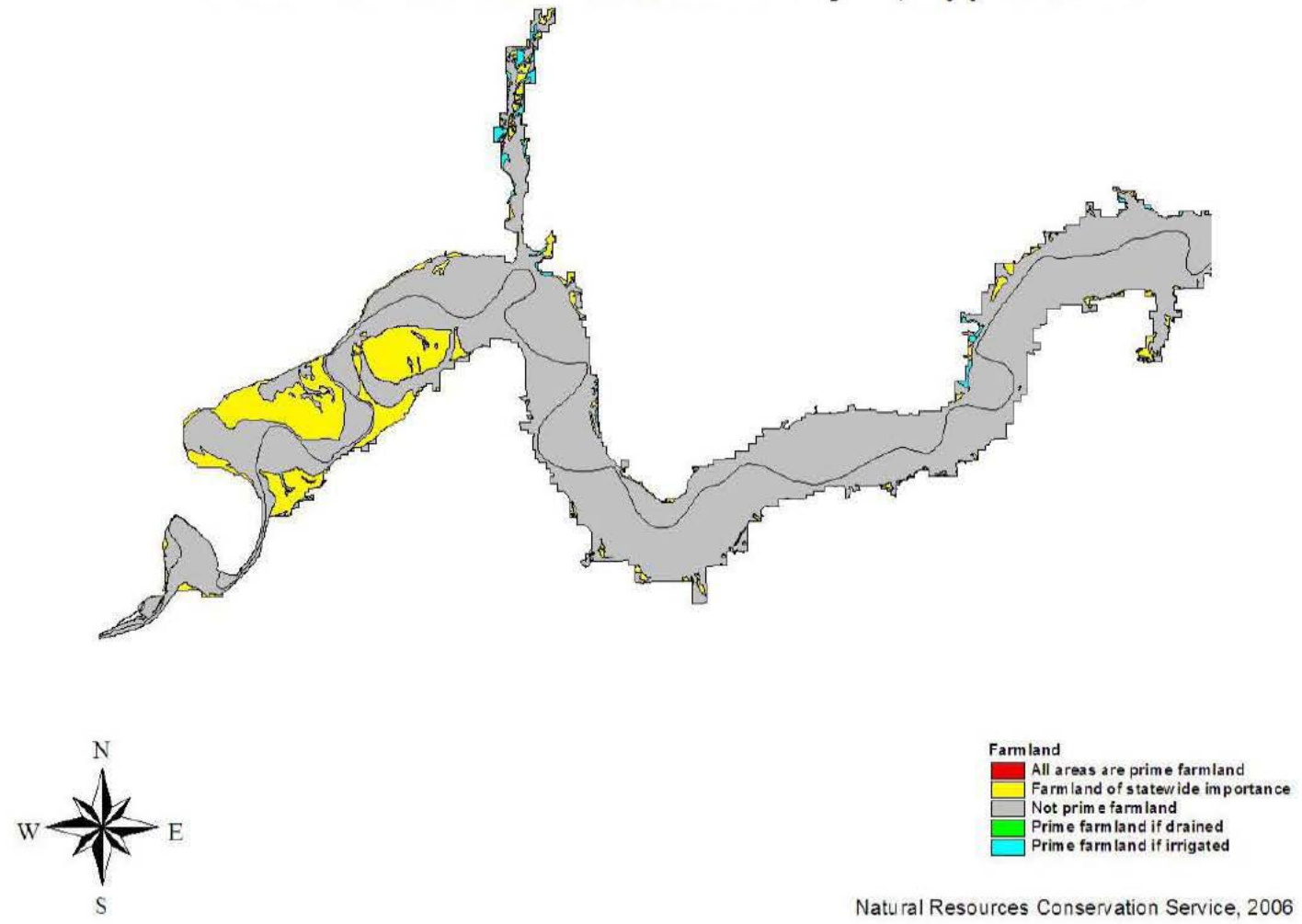
The Natural Resources Conservation Service (NRCS) has quantified the approximate acreages of existing prime farmland and farmland of statewide importance. These acreages are presented in table 2.5.2 and illustrated in Figure 2.5.1.

**Table 2.5.2 Approximate Acreages of Prime Farmland and Farmland of Statewide Importance for the Garrison Dam/Lake Sakakawea Project**

Natural Resources Conservation Service 2007	
Prime Farmland and Farmland of Statewide Importance within the Garrison Dam/Lake Sakakawea Project Area	
	Acres
All areas are prime farmland	4556.001537
Prime farmland if drained	236.7894686
Farmland of statewide importance	20174.98569
Prime farmland if irrigated	1069.989709
Not prime farmland	475792.8417

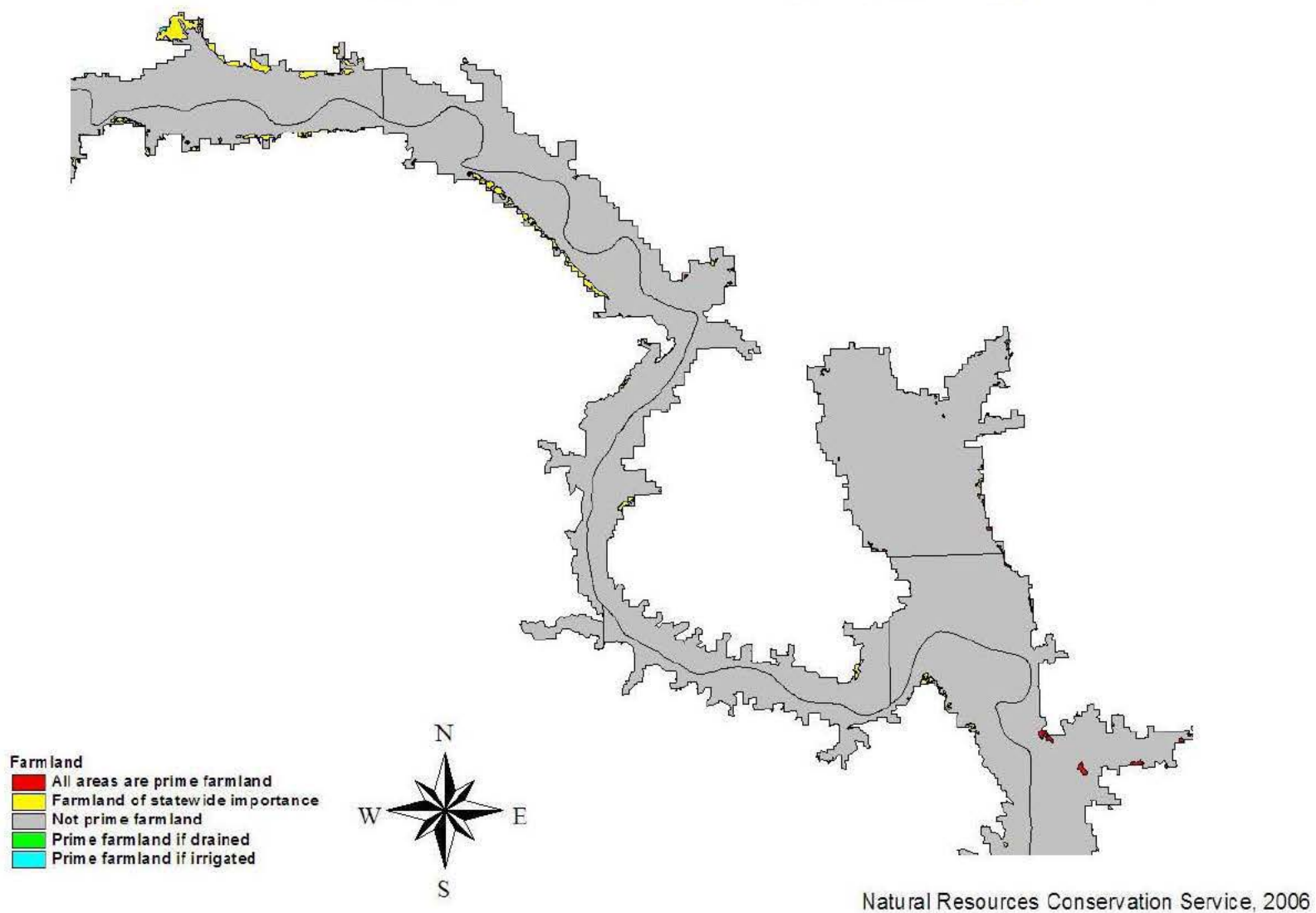
**FIGURE 2.5.1. Prime Farmland and Farmland of Statewide Importance for the Garrison Dam/Lake Sakakawea Project**

**North Dakota Prime Farmland and Statewide Important Soils  
Garrison Dam/Lake Sakakawea Project, Upper Reach**



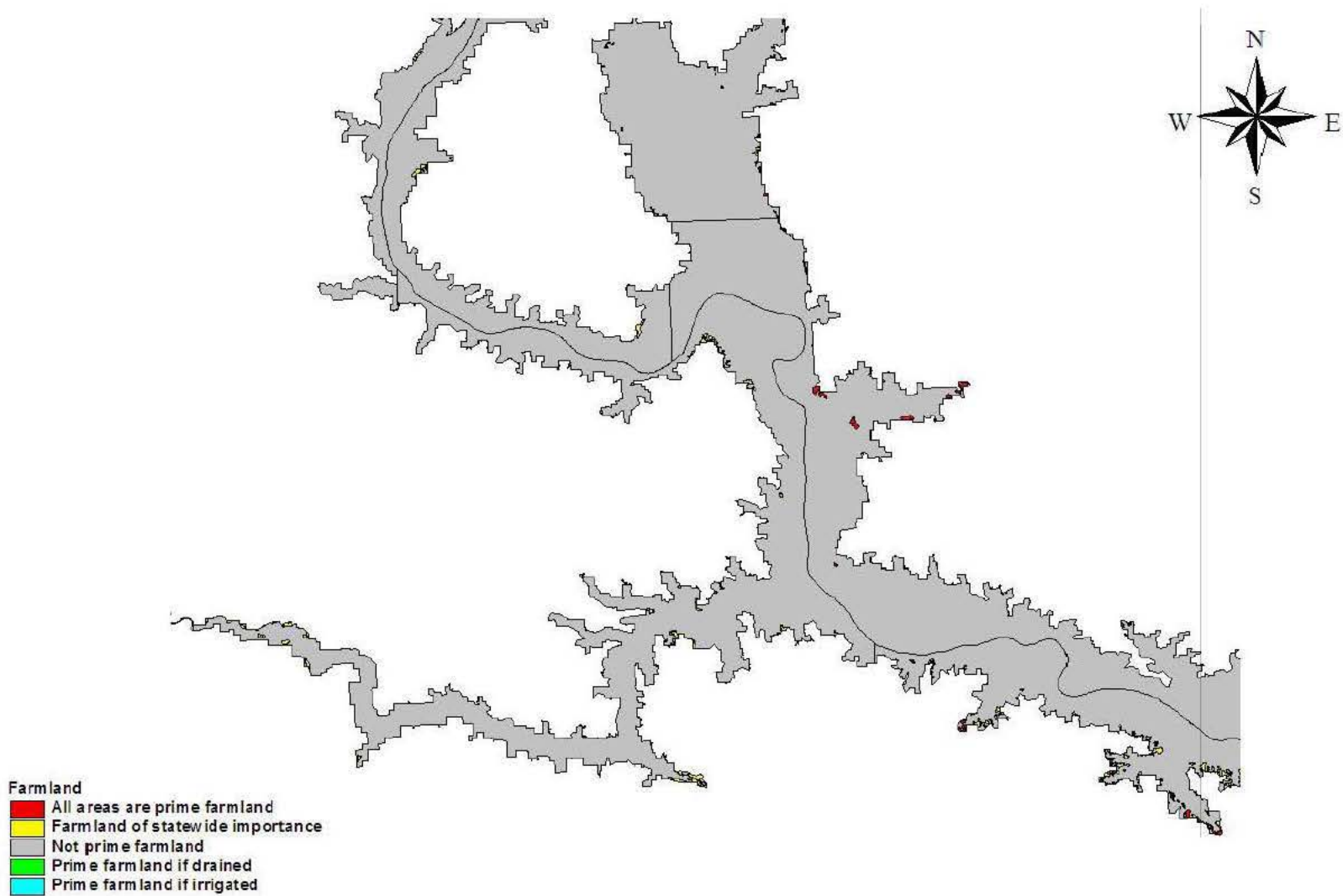
Natural Resources Conservation Service, 2006

## North Dakota Prime Farmland and Statewide Important Soils Garrison Dam/Lake Sakakawea Project, Mid-Upper Reach





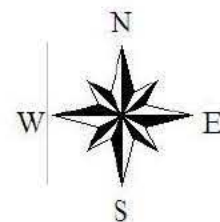
## North Dakota Prime Farmland and Statewide Important Soils Garrison Dam/Lake Sakakawea Project, Mid Reach



## North Dakota Prime Farmland and Statewide Important Soils Garrison Dam/Lake Sakakawea Project, Lower Reach



- Farmland
- All areas are prime farmland
  - Farmland of statewide importance
  - Not prime farmland
  - Prime farmland if drained
  - Prime farmland if irrigated



## **2.6. HYDROLOGY AND GROUNDWATER**

### **2.6.1. HYDROLOGY**

The state of North Dakota (ND) is separated into two major drainage basins by a continental divide running from the northwestern through the central and southeastern parts of the state. The northeastern part of the state falls generally within the Hudson Bay drainage, while the southwestern part is drained by the Missouri River into the Gulf of Mexico (ND State Water Commission 2005).

The Missouri River drainage basin in North Dakota includes the major sub-basins of the Missouri River and the James River. The area is characterized by a combination of glaciated terrain, with badlands and landforms of eroded, soft, sedimentary bedrock in the southwest (ND State Water Commission 2005).

#### **2.6.1.1. Missouri River**

The Missouri River is one of the longest rivers in the United States. It is formed by the joining of the Gallatin, Madison, and Jefferson rivers near Three Forks, Montana. It generally flows south and east, entering into the Mississippi River near St. Louis, Missouri. The Missouri River basin, including over 95 major tributary rivers and streams, encompasses over 338.5 million acres. The terrain in the basin ranges from the eastern slope of the Rocky Mountains to the fertile soils of the central prairies. Prior to the channelization and impoundments beginning in the 1930s, the Missouri River was known for its shifting channels, high turbidity, and periodic floods.

#### **2.6.1.2. Yellowstone River**

The Yellowstone River is the principal tributary of the upper Missouri River. The Yellowstone River is approximately 671 miles, or 1,080 kilometers (km) long, the longest undammed river in the lower 48 states. Its headwaters are in the Rocky Mountains near Yellowstone National Park, and it crosses the mountains and high plains of southern Montana and northern Wyoming before discharging into the Missouri River in northeastern Montana.

#### **2.6.1.3. Little Missouri River**

The Little Missouri River is a tributary of the Missouri River. It is 560 miles (901 km) long. It originates in western Crook County in northeastern Wyoming, approximately 20 miles west of Devil's Tower. It flows northeastward, across a corner of southeastern Montana, and into South Dakota. In South Dakota, it flows northward through the Badlands into North Dakota, crossing the Little Missouri National Grasslands and both units of Theodore Roosevelt National Park. In the north unit of the park, it turns eastward and flows into the Missouri at Lake Sakakawea, where it forms an arm of the reservoir 30 miles (48 km) long called Little Missouri Bay that joins the main channel of the Missouri approximately 25 miles (40 km) northeast of Killdeer, ND.

#### **2.6.1.4. White Earth River**

The White Earth River is the only major tributary of the Missouri River flowing into upper Lake Sakakawea. It is approximately 50 miles (80 km) long, in northwestern

North Dakota. It rises in the plains of southeastern Divide County approximately 10 miles (16 km) east of Wildrose. It flows east and south through Mountrail County and joins the impounded Missouri River at Lake Sakakawea.

#### **2.6.1.5. Little Muddy Creek**

Little Muddy Creek is a tributary of the Missouri River, approximately 45 miles (70 kilometers) long, in northwestern North Dakota. It rises in the prairie country of northern Williams County and flows west, then south, joining the Missouri in the delta area at Williston. The lower 5 miles (8 km) of the creek forms a small arm of Lake Sakakawea.

### **2.6.2. GROUNDWATER**

Groundwater underlies the land surface throughout all of North Dakota. Groundwater generally occurs in two major types of rock – unconsolidated deposits and bedrock. Unconsolidated deposits are loose beds of gravel, sand, silt or clay of glacial origin. Bedrock consists primarily of shale and sandstone. With exception of southwestern North Dakota, bedrock underlies the unconsolidated deposits. Saturated deposits that are sufficiently permeable to readily transmit water are called aquifers. Aquifers in the unconsolidated deposits are the result of glacial outwash deposits. These aquifers are generally more productive than aquifers found in the underlying bedrock. Bedrock aquifers underlie the entire state and tend to be more continuous and widespread than aquifers in the unconsolidated deposits (ND State Water Commission 2005).

It is estimated that 60 million acre-feet of water are stored in the major unconsolidated aquifers in the state. The amount of water in the bedrock aquifers is unknown (ND State Water Commission 2005).

Water quality of the state's aquifers varies greatly and in many areas is marginal. Water in the unconsolidated aquifers is generally less mineralized than water in deeper bedrock aquifers, which is typically more saline (ND State Water Commission 2005).

## **2.7. RESERVOIR OPERATION**

### **2.7.1. MISSOURI RIVER MAINSTEM SYSTEM**

Lake Sakakawea is regulated as an integral component of the system of six mainstem dams and reservoirs on the upper Missouri River. To achieve full coordination within the entire Missouri River basin and to meet all of the authorized project purposes, regulation of all six mainstem reservoirs is directed by the Missouri River Basin Water Management Division located in Omaha, Nebraska, part of the Corps' Northwestern Division. The six mainstem reservoirs operated by the Corps of Engineers are listed in Table 2.7.1.

**Table 2.7.1. Missouri River Mainstem Flood Control Reservoirs**

<b>Project (Dam and Reservoir)</b>	<b>Incremental Drainage Area (Square Miles)</b>	<b>Year of Closure</b>	<b>Flood Control and Multiple Use Storage in Acre-Feet (AF)</b>	<b>Total Storage in Acre-Feet</b>
Fort Peck Dam / Fort Peck Lake	57,500	1937	2,717,000	18,688,000
Garrison Dam / Lake Sakakawea	123,900	1953	4,222,000	23,821,000
Oahe Dam / Lake Oahe	62,090	1958	3,201,000	23,137,000
Big Bend Dam / Lake Sharpe	5,840	1963	117,000	1,798,000
Fort Randall Dam / Lake Francis Case	14,150	1952	1,309,000	5,418,000
Gavins Point Dam / Lewis and Clark Lake	16,000	1955	90,000	470,000

Lake Sakakawea provides a significant storage contribution to the mainstem system of reservoirs. It is the largest of the six reservoirs, with a storage capacity of 23.8 million acre-feet (MAF), which comprises 32 percent of the total 73.3 MAF storage capacity in the mainstem system.

### **2.7.2. RESERVOIR REGULATION**

For the purpose of regulation, the storage capacity at Lake Sakakawea is divided into four zones. Starting at the bottom, there is the 4.9 MAF permanent pool between elevations 1775.0 and 1673.0 feet msl. This zone provides minimum power head and sediment storage capacity and assures minimum level for pump diversion of water from the reservoir. Above the permanent pool there is the 13.1 MAF carry-over multiple-use zone between elevations 1837.5 and 1775.0 feet msl. This intermediate zone provides a storage reserve for irrigation, navigation, power production, and other beneficial conservation uses. This zone also provides carry-over storage for maintaining downstream flows through a succession of years in which runoff is below normal. The next zone is the 4.2 MAF annual flood control and multiple use zone between elevations 1837.5 and 1850.0 feet msl. This is the desired operating zone. Water stored in this zone is normally evacuated by March 1 of each year to provide adequate storage capacity for the flood season. During the flood period, water is impounded in this space as required. Finally, the upper zone, or exclusive flood control zone, consists of 1.5 MAF of storage between elevations 1850.0 and 1854.0 feet msl. This zone is used only during periods of extreme floods and is evacuated as soon as downstream conditions permit.

Regulating the Missouri River mainstem reservoir system is essentially a repetitive annual cycle. Unless water conservation measures are being implemented, the reservoirs are evacuated to the bottom of the annual flood control and multiple use zone by March 1. Because the major portion of the annual runoff enters the reservoirs between March and July, storage accumulates and usually reaches a peak during early July. During an average year, the Lake Sakakawea elevation crests near 1840 feet msl. Releases from Lake Sakakawea are scheduled throughout the remainder of the year to provide support

for hydropower production and other authorized purposes. Releases during the summer and winter are generally higher than those in the spring and fall due to increased demand for hydropower. In addition, releases from Fort Peck Lake and Lake Sakakawea are higher than those from Lake Oahe and Lake Francis Case during the winter to provide additional hydropower generation and to refill Lake Francis Case, and to a lesser extent, Lake Oahe, during the winter period. During periods of normal to above normal runoff, these releases evacuate the water stored in the annual flood control and multiple use zone, drawing the reservoir down to the top of the carry-over multiple-use zone (elevation 1837.5 feet msl.) by the following March 1, when the cycle begins once more. During a period of extended drought, water is drafted from the large carry-over multiple-use zone. The conservation storage provided in the carry-over multiple-use zones of the six mainstem reservoirs was designed to serve all authorized project purposes through a drought like that of the 1930's, though at reduced levels.

### **2.7.3. LAKE SAKAKAWEA POOL ELEVATIONS**

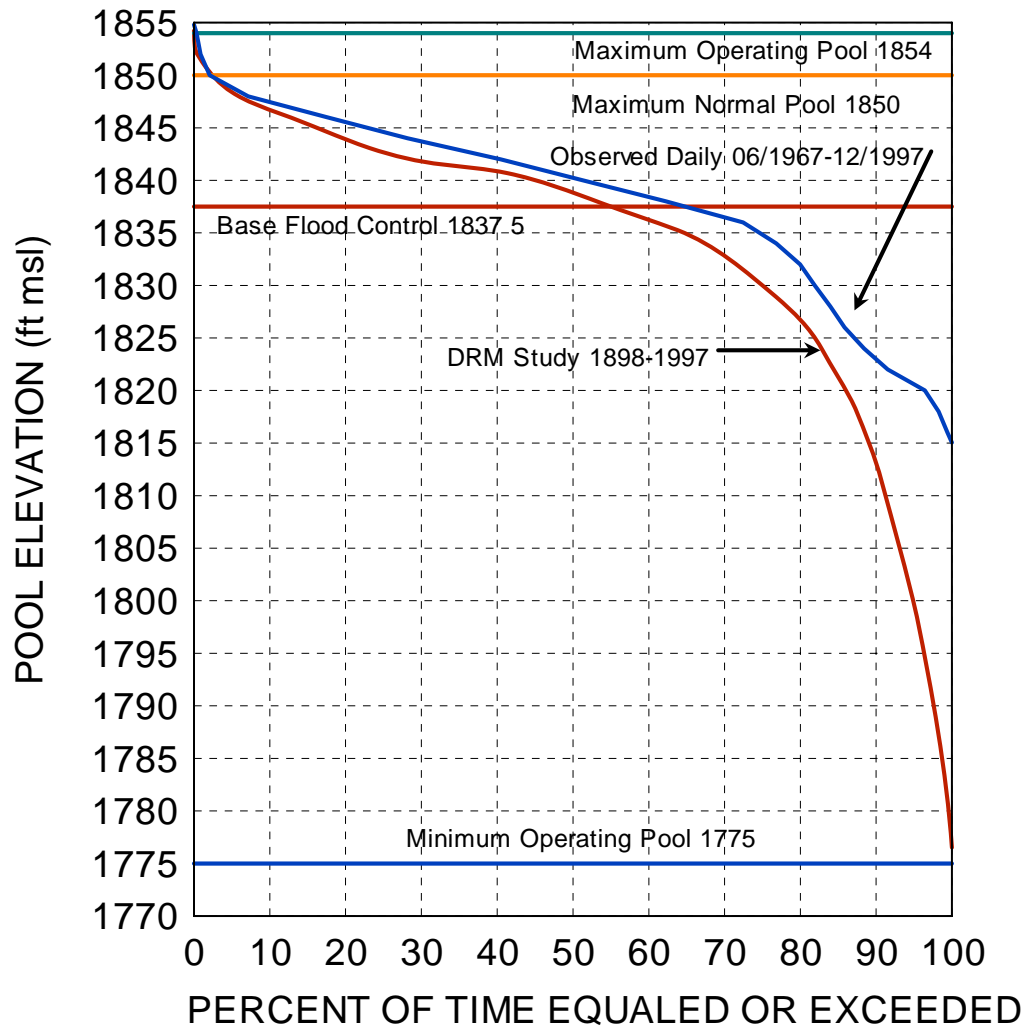
Table 2.7.2 shows the maximum, average, and minimum Lake Sakakawea elevations for the period of record, 1967-2006, since the mainstem reservoir system first filled to normal operating levels in June 1967. This actual 40-year period of record is comprised of 24 years of near normal to much above normal annual runoffs and 16 years of drought (1977, 1980-81, 1987-92, and 2000-2006). During extreme flood events, the lake level could reach as high as the maximum surcharge pool, elevation 1854.0 feet msl.

**Table 2.7.2. Summary of Lake Sakakawea Pool Elevations and Releases by Month, based on Historical Records (June 1967 - December 2006).**

MONTH	POOL ELEVATION (ft msl)			DAILY RELEASE (cfs)		
	Maximum	Minimum	Mean	Maximum	Minimum	Mean
Jan	1845.3	1808.4	1833.6	34,200	12,500	23,200
Feb	1843.6	1808.2	1832.2	36,000	11,000	24,400
Mar	1847.9	1808.2	1832.3	37,800	4,100	19,700
Apr	1847.7	1806.6	1833.6	39,100	8,700	19,300
May	1848.0	1805.8	1834.2	41,200	9,100	21,400
Jun	1853.7	1809.1	1837.1	50,100	9,500	23,300
Jul	1854.8	1815.2	1840.0	65,200	9,500	24,700
Aug	1854.6	1811.9	1839.4	65,100	12,100	24,500
Sep	1851.3	1809.5	1837.7	50,100	6,000	20,900
Oct	1848.2	1809.3	1836.8	49,700	9,200	19,300
Nov	1847.4	1808.9	1836.0	50,100	9,300	20,200
Dec	1846.8	1807.8	1834.5	39,100	12,500	20,500
Annual	1854.8	1805.8	1835.5	65,200	4,100	21,700

Figure 2.7.1 shows the pool duration curve for Lake Sakakawea based on the period June 1967 to December 1997 and regulation in accordance with the 1979 Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual). During drought conditions, the carry-over multiple-use zone, which contains 55 percent of the Lake Sakakawea storage, is used to supplement deficient inflows to continue limited service to all of the authorized project purposes of the mainstem system.

**Figure 2.7.1. Lake Sakakawea Pool Duration Curve, June 1967 – December 1997.**



A review and update of the Master Manual was initiated by the Corps' Northwestern Division in November 1989 and was completed in 2004. The Master Manual was revised again in March 2006 to reflect operating procedures to comply with the 2003 Amended Biological Opinion, which was completed for the Corps by the U.S. Fish and Wildlife Service. Based on regulation of the six mainstem reservoirs according to the criteria presented in the 2006 Master Manual, the minimum anticipated level for Lake Sakakawea is 1792 feet msl; however, the base of the carry-over multiple-use zone (top of the permanent zone) is 1775 feet msl.

## 2.8. SEDIMENTATION

Sediment in Lake Sakakawea has two major sources: erosion of land adjacent to the shore of the lake by wave action; and sediment transported to the lake by tributary streams, including the Missouri River itself.



### **2.8.1. SHORELINE EROSION**

Most youthful lakes develop erosion features such as wave-cut banks, sediment bars, and truncated promontories. However, these features are developing at Lake Sakakawea on a grand scale due to two major factors. First, the lake is very long, and when winds blow from the right direction, waves have a long time to develop, increasing their power and their potential for shoreline erosion. Second, as explained in the Geology section of Chapter 2, the soils and the underlying unconsolidated materials from which the soils developed are highly erodible. Erosion further increases when sparsely vegetated areas normally under water are exposed during drought-induced low lake levels.

A predictable result of the rapid shoreline erosion is sediment in-fill of the lake, including siltation on boat ramps. Shoreline erosion may also result in damage or destruction to cultural resource sites, recreation facilities, and fish and wildlife habitat. Stabilizing the shoreline to protect recreational facilities and structural protection of cultural resource sites are development needs proposed for many Lake Sakakawea areas in Chapter 7 (Resource Plan). Steep banks due to shoreline erosion may also make public access to the shoreline difficult and present public safety concerns, resulting in the installation (or need for) safety fencing and warning signs at some recreational areas.

### **2.8.2. STREAM TRANSPORTED SEDIMENT**

The Missouri River and its tributaries are located in one of the largest sediment producing regions in the continental United States. This sediment is transported by the water in suspension or by moving along the river bed. When the water slows down due to a lake, reservoir, or other impediment some or all of the sediment is deposited. At Lake Sakakawea, deposition of the heavier sediment particles begins as the water slows down as it approaches the reservoir. The finer material is transported farther out into the lake before it is deposited. The specific composition of the sediment is a result of the composition of source materials upstream and the ability of the tributaries to transport them, which is largely due to velocity. The higher the velocity, the larger the particles that can be transported. The material that has been deposited in Lake Sakakawea is comprised of sands (largest particles), silts, and clays (smallest particles).

The Corps' Omaha District developed area-capacity tables for Lake Sakakawea and conducted surveys there every few years to estimate the rate of sedimentation. Between 1953 (the first survey) and 1988 (the last survey), it is estimated that 907,000 acre-feet of sediment was deposited in Lake Sakakawea. This equates to approximately 25,914 acre-feet (or about 1 foot of sediment covering about 40 square miles) per year.

Approximately 60 percent of the sediment has been deposited within 35 miles of Williston, ND. Most of this was transported by the Yellowstone and Missouri Rivers. Even before Lake Sakakawea formed, the Yellowstone River deposited excess sediment in the flood plain at its confluence with the Missouri River. The enormous quantity of sediment carried by the Yellowstone and deposited in the Missouri created an unusually wide flood plain cut by numerous channel loops. Prior to the construction of Garrison Dam, the Missouri River channel downstream of the Williston area varied in width from approximately 700 to 3,000 feet. When the reservoir reached the normal operating pool,

the water width was approximately 10,000 feet. In time, as sediment is deposited in this reach, a new riverine environment will be established. Silt deposits that form “deltas” between the earlier “lake” phase and the later “riverine” phase at the upstream ends of reservoirs reduce water depths and may result in watercraft running aground.

About 20 percent of the sediment has been deposited in the Little Missouri River arm. Extensive mudflats are found in the upper end of the Little Missouri River embayment. The remaining 20 percent of the sediment was contributed by other tributaries and reservoir bank erosion. Sediment from these sources has resulted in conversion of open water to mudflats at the upper ends and shorelines of the numerous bays along the lake.

When the reservoir pool is high, most if not all tributaries and small drainages are connected to the reservoir. When the reservoir is low, however, many of the smaller tributaries and drainages are blocked and are no longer connected to the reservoir. This can cause access problems for recreational boating and can limit the movement of fish into and out of the minor tributary arms. If the reservoir remains low for several years, fish access problems may decrease when the tributaries establish a new connection to the reservoir. Boating access problems will remain an issue until the reservoir refills.

The soft, silty bottom and turbid, muddy water that result from sediment deposits at the upper end of Lake Sakakawea greatly reduce food and spawning habitat for fish. During these periods of high turbidity, catch of recreational fish species has been poor at the upper end of the lake. For example, walleye spawn on gravel, and siltation greatly reduces both the quantity and quality of walleye spawning habitat.

## **2.9. WATER QUALITY**

### **2.9.1. APPLICABLE WATER QUALITY STANDARDS**

#### **2.9.1.1. Lake Sakakawea**

In accordance with the Federal Clean Water Act (CWA), the State of North Dakota (ND) has designated Lake Sakakawea as a Class 1 lake in the State’s water quality standards. As such, the lake is to be suitable for a coldwater fishery (i.e., salmonid fishes and associated aquatic life); swimming, boating, and other water recreation; irrigation; stock watering; wildlife; and water for municipal or domestic use after appropriate treatment. The lake is used as a water supply by some individual cabins; by the towns of Four Bears, Mandaree, Pick City, Parshall, Riverdale, Trenton, Twin Buttes, and Williston, ND; the Southwest Pipeline Project; and the Northwest Area Water Supply Project. The lake will also be used in the future by the Red River Valley Water Supply Project. Lake Sakakawea is an important recreational resource and a major visitor destination in ND.

Under the terms of the Federal CWA, the State of ND has placed Lake Sakakawea on the State’s Section 303(d) list of impaired waters. Habitat water quality for fish and other aquatic life is impaired due to low dissolved oxygen, high water temperature, and high methylmercury concentrations. The State of ND has issued a fish consumption advisory for Lake Sakakawea due to mercury concerns.

### **2.9.1.2. Missouri River Downstream of Garrison Dam**

The Missouri River downstream of Garrison Dam has been designated as a Class 1 stream by the State of ND. As such, the river is to be suitable for resident fish species and other aquatic life; for swimming, boating, and other water recreation; and for irrigation, stock watering, and wildlife use without injurious effects. After treatment, the water quality shall meet the requirements of the State for municipal or domestic use. The tailwaters area of the Missouri River below Garrison Dam is not classified separately from the rest of the river; however, unlike reaches farther downstream, the tailwaters area supports a coldwater fishery.

### **2.9.2. WATER QUALITY MANAGEMENT PLANNING**

Water quality management planning is essential to ensure that the water quality standards explained above continue to be met. Water quality management objectives for the Garrison Dam/Lake Sakakawea Project will be developed based on a 5-year process that includes intensive water quality surveys, water quality modeling, and preparation of reports that reflect current water quality conditions (USACE, 2006a). An intensive water quality survey was completed during 2003 through 2005, as described in section 2.9.3. The survey results are summarized in section 2.9.4 and are presented in detail in a report (USACE 2006b). Water quality management objectives are expected to be completed for the Garrison Dam/Lake Sakakawea Project in 2007, after a report on the application of the CE-QUAL-W2 computer model to the reservoir is prepared.

The CE-QUAL-W2 model can greatly help in addressing reservoir water quality management issues. It is a water quality and hydrodynamic computer model in two dimensions (longitudinal and vertical) for rivers, estuaries, lakes, reservoirs, and river basin systems. It models basic physical, chemical, and biological processes such as temperature, nutrients, algae, dissolved oxygen, organic matter, and sediment relationships. The model can be used to evaluate how reservoir regulation by the Corps, such as pool levels and dam releases, affects water quality in the reservoir and in the Missouri River downstream of the dam. The model can also be used to evaluate how the existing outlet structures at Corps projects may be affecting water quality, and if modifications to the outlet structures could improve water quality. Model simulations of hydrodynamics, temperature, dissolved oxygen, and nutrients are being conducted based on the water quality data that was collected in the intensive water quality survey from 2003 through 2005. The short-term water quality management measures implemented in 2005, described in section 2.9.5, are also being simulated. Modeling is an iterative process: the collected data is entered into the model; the model is run; the results are analyzed and reviewed; and the model is continuously adjusted as new information is gathered.

### **2.9.3. WATER QUALITY MONITORING**

#### **2.9.3.1. Monitoring at Lake Sakakawea**

Water quality at Lake Sakakawea has been monitored at fixed stations for the past 30 years. Recent monitoring has been conducted at a near-dam, deepwater site near Government Bay

once a month, from May through September. During 2003, 2004, and 2005, additional data were collected monthly to biweekly from two inflow sites and eight fixed station deepwater sites that were relatively equal distances apart along the length of the lake. Four deepwater sites were in the lacustrine (deepest water) zone: Government Bay, Douglas Bay, Beulah Bay, and Indian Hills. Two deepwater sites were in the riverine zone (the upper end of the lake): New Town and White Earth Bay. Two deepwater sites were in the transition (middle) zone: Deepwater Bay and Independence Point. The two inflow sites were on the Missouri River near Williston, ND and the Little Missouri River near Kildeer, ND.

Measurements taken at the inflow sites included temperature, dissolved oxygen, pH, conductivity, and turbidity. At the deepwater sites, water transparency was measured by the deepest depth at which a Secchi disk was visible; temperature, dissolved oxygen, pH, conductivity, oxidation-reduction potential, chlorophyll a, and turbidity were measured at 1-meter depth intervals from the reservoir surface to the bottom. At all sites, near-surface and near-bottom samples were collected and analyzed for alkalinity, several types of nitrogen and phosphorus, suspended and dissolved solids, total organic carbon, sulfate, iron, and manganese. A near-surface sample was also collected for analysis of chlorophyll a and types and abundance of phytoplankton. Water samples from the site near Government Bay were also analyzed for 14 additional metals (including dissolved mercury and total mercury), selenium, three herbicides, and a variety of pesticides. The findings are presented in “Water Quality Conditions Monitored at the Corps’ Garrison Project in North Dakota during the 3-Year Period 2003 through 2005” (USACE 2006b). This fixed station monthly monitoring from May through September will continue long-term at the Government Bay, Beulah Bay, Deepwater Bay, and New Town monitoring stations and at the Missouri River inflow site. Results from monitoring in 2006 at these sites are presented in “Water Quality Conditions in the Missouri River Mainstem System: 2006 Annual Report” (USACE 2007a).

#### **2.9.3.2. Monitoring of Water Discharged through Garrison Dam**

Water is drawn from the five penstocks and piped through the power plant in a “raw water” supply line, through which water is continually discharged. Year-round, hourly measurements of this raw water supply line have been taken for temperature, dissolved oxygen, pH, and conductivity at monitoring stations through the use of data-loggers since 2004, and this monitoring will continue long-term. Recently, water samples have also been collected every month and analyzed for alkalinity, several types of nitrogen and phosphorus, total suspended solids, total dissolved solids, total organic carbon, sulfate, pesticides, and various metals, including total and dissolved mercury. These measurements are believed to represent the water quality conditions in Lake Sakakawea near the dam intake and in the tailwaters (the Missouri River immediately downstream of the dam) and will also continue to be taken long-term. During July through October, 2005, water quality was monitored in each of the dam’s five individual penstocks to evaluate the effectiveness of the short-term water quality management measures to protect the coldwater fishery, described later in this Water Quality section. In 2005, temperature and dissolved oxygen were also measured at 1-meter depth intervals at six evenly-spaced stations along the submerged intake channel 2.5 miles long in Lake Sakakawea near Garrison Dam.

#### **2.9.3.3. Other Water Quality Monitoring**

Other water quality monitoring will be conducted as necessary and appropriate to: 1) update the CE-QUAL-W2 model so it can be effectively used for decision-making on water quality management efforts; 2) evaluate short-term water quality management measures; and 3) respond to any operational situation, pollution event, public complaint, or fish kill.

#### **2.9.4. EXISTING WATER QUALITY CONDITIONS**

Table 2.9.1 summarizes the water quality conditions that exceeded ND standards during 2001-2005 at Government Bay and 2003-2005 at the other monitoring stations.

Dissolved mercury and total mercury concentrations did not exceed ND standards.

The results of the water quality monitoring indicate no major water quality concerns other than water temperature and dissolved oxygen for the support of coldwater habitat. Although water quality conditions were generally poor in the Little Missouri River near Kildeer, ND, the inflow volume is relatively minor compared to that of the Missouri River. The following paragraphs explain the major lake water quality characteristics.

**Table 2.9.1. Summary of the percent of water quality measurements exceeding State water quality standards criteria based on monthly monitoring, May to September, conducted during the period 2003 to 2006 at 10 sites at the Garrison Dam/Lake Sakakawea Project. Note: the Government Bay area on Lake Sakakawea is based on monitoring conducted during the period 2001 to 2005, and the sites near Indian Hills, Independence Point, White Earth Bay, and Kildeer were monitored 2003 to 2005.**

Parameter	Water Quality Criteria	Lake Sakakawea, RM 1390 Government Bay Area	Lake Sakakawea, RM 1399 Douglas Bay Area	Lake Sakakawea, RM 1412 Beulah Bay Area	Lake Sakakawea, RM 1428 Indian Hills Area	Lake Sakakawea, RM 1445 Deepwater Bay Area	Lake Sakakawea, RM 1454 Independence Point Area	Lake Sakakawea, RM 1481 New Town Area	Lake Sakakawea, RM 1493 White Earth Bay Area	Missouri River Near Williston, ND (RM 1552)	Little Missouri River Near Kildeer (ND Hwy. 22 Bridge)
Water Temperature											
Number of Measurements	---	1089	600	829	375	626	280	336	71	21	6
Percent of Measurements Exceeding Criteria	29.4°C* 15.0°C**	0% 46%	0% 56%	0% 59%	0% 67%	0% 67%	0% 77%	0% 93%	0% 100%	0% 76%	0% 100%
Dissolved Oxygen											
Number of Measurements	---	1089	600	829	375	626	280	336	71	21	6
Percent of Measurements Exceeding Criteria	5 mg/l*	3%	8%	8%	7%	9%	8%	2%	0%	0%	0%
Lead (Total)											
Number of Measurements	---	5	0	0	0	0	0	0	0	0	0
Percent of Measurements Exceeding Criteria	211 µg/l*** 8.2 µg/l*** 15 µg/l***	0% 40% 20%	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---

\* Water quality standards criteria for aquatic life protection.

\*\* Criterion was identified by the State of North Dakota for optimal support of coldwater fishery habitat in Lake Sakakawea; it is not a State water quality standards criterion.

\*\*\* Note: The lead criterion of 211 µg/l (micrograms per liter) is an acute criterion for the protection of aquatic life; the criterion 8.2 µg/l is a chronic criterion for the protection of aquatic life; and 15 µg/l is a human health criterion. The acute and chronic aquatic life criteria for lead are hardness based; criteria listed are based on a median monitored hardness of 211 mg/l.

#### **2.9.4.1. Water Temperature**

Lake Sakakawea undergoes an annual water temperature cycle, based on the four seasons and the transition between seasons. During the winter ice cover period, the coldest, near-freezing water is near the surface and the slightly warmer, densest water (4° C or 39° F) lies beneath. When the ice cover melts in the spring, lake water will become uniform in temperature at about 4° C due to complete mixing (spring turnover). As the lake gradually warms in the spring, uniform temperatures (> 4° C) will continue as long as there is complete mixing. As the lake continues to warm in late spring and early summer, layers based on temperature (that is, density) form. This is called thermal stratification; the upper (warmer) layer is called the epilimnion, and the lower (colder) layer is called the hypolimnion. The layers are separated by the thermocline, a thin layer in which the temperature declines greatly with small increases in depth. As the lake begins to cool in late summer, the upper layer will expand downward, and the volume of colder water below will decrease. The lake will continue to cool until all depths have similar temperatures due to complete mixing (fall turnover). As the lake continues to cool, temperatures will remain similar at all depths until the lake cools to 4° C. As surface water cools further, it becomes less dense and so does not mix with the water below; it freezes when it cools to 0° C (32° F), completing the annual cycle.

During the summer, a strong thermocline becomes established in the deeper area of the reservoir towards the dam. Between 2001 and 2005, this thermocline was located about 25 meters (82 feet) below the surface of the lake. The upstream boundary of the hypolimnion in Lake Sakakawea occurs where the elevation of the thermocline is the same elevation as the lake bottom. During 2003 through 2005, the upstream boundary of the hypolimnion was in the Deepwater Bay/Independence Point area (River Mile 1450). Because the thickness of the upper (warm water) layer tends to remain the same from year to year due to mixing by wind, the higher the surface elevation of the lake, the farther upstream the boundary of the hypolimnion (and the coldwater fishery) extends. The shallower upper reaches of Lake Sakakawea do not vary much in temperature by depth during mid to late summer because wind action completely mixes the water.

#### **2.9.4.2. Dissolved Oxygen**

Dissolved oxygen concentrations in Lake Sakakawea vary from the dam to the reservoir's upper reaches, and from the reservoir surface to the bottom. Dissolved oxygen levels  $\geq 5$  mg/l (milligrams per liter) are required for fishery habitat. Dissolved oxygen levels below 5 mg/l first appear near the reservoir bottom in the upper middle reaches of the reservoir in July, due to a high amount of decomposing materials (that is, high demands for oxygen) and a relatively small layer of cold water (which can dissolve more oxygen than warm water can). The near-bottom dissolved oxygen concentrations in the upper middle reaches of the reservoir generally recover by late summer due to wind-driven water mixing, except for very deep areas such as Deepwater Bay, where dissolved oxygen concentration was 1.0 mg/l in August 2006 (USACE 2007a). However, by this time dissolved oxygen concentrations below 5 mg/l have advanced along the reservoir bottom towards the dam. Decomposition of organic matter in the lacustrine zone (the downstream half of the lake) results in reduced dissolved oxygen concentrations near the bottom as the summer progresses, as low as 3.8 mg/l during the 2001-2006 period at

Government Bay (USACE 2006b, 2007a), but dissolved oxygen levels recover when mixing takes place in the deeper water during fall turnover. The near-bottom location of the power tunnel intakes at Garrison Dam could possibly promote the movement of oxygen-demanding material and water low in dissolved oxygen from the upper middle reaches of the reservoir to the reach near the dam.

#### **2.9.4.3. Water Clarity**

During the 2003-2006 period, measurements at eight water quality monitoring sites in Lake Sakakawea showed that water transparency increased significantly in a downstream direction from the White Earth Bay station to the Indian Hills station, due mainly to decreasing amounts of sediment particles suspended in the water. Downstream of Indian Hills, transparency did not show significant changes (USACE 2006b, 2007a).

#### **2.9.4.4. Turbidity**

Turbidity causes light to be scattered and absorbed rather than transmitted. Turbidity is caused by suspended material. Because concentrations of chlorophyll *a* (an indicator of organic material and microscopic organisms) in Lake Sakakawea are low, turbidity is largely due to suspended inorganic material. Turbidity levels are significantly higher in the upper reaches of the reservoir than in the area nearer to the dam, due to the high amount of material suspended in the inflowing Missouri River. Turbidity plumes may move downstream through Lake Sakakawea, especially along the bottom, because colder, high-turbidity inflowing snowmelt runoff flows underneath warmer, less dense surface waters in the lake.

#### **2.9.4.5. Levels of Nutrients and Biological Productivity (Trophic State)**

Reservoirs are classified or grouped by trophic or nutrient status. Lakes tend to change through time from an oligotrophic condition (low levels of nutrients and productivity) through a mesotrophic condition (intermediate levels of nutrients and productivity) to a eutrophic condition (high levels of nutrients and productivity). The nutrient enrichment process can worsen water quality in lakes by: increasing the occurrence of algal blooms, noxious odors, and fish kills; reducing water clarity; and reducing dissolved oxygen concentration in the lower layer. The nutrient enrichment process can be accelerated by discharges containing nutrients from facilities such as wastewater treatment plants and by runoff from cropland, livestock facilities, and urban areas.

The nutrient status during 2003-2006 for the three zones of Lake Sakakawea was calculated using the methods of Carlson (1977) and transparency, total phosphorus, and chlorophyll *a* data from the eight in-lake stations. The calculations indicate that the deepest zone of the lake, extending from upstream of the Indian Hills station downstream to the dam, is mesotrophic; the middle zone, containing the Deepwater Bay and Independence Point stations, is moderately eutrophic; and the upstream end of the lake, containing the New Town and White Earth Bay stations, is eutrophic. The upstream end of the lake may not actually be eutrophic, however, because the low water clarity is largely due to suspended inorganic material delivered by the Missouri River, rather than increased growth of algae associated with nutrient enrichment. Phytoplankton samples collected during 2004, 2005, and 2006 showed that diatoms, which are not involved in



“toxic” algal blooms, were the most prevalent group of algae. Blue-green algae, which can be involved in “toxic” algal blooms, appeared in only one of the 15 samples, and no toxins from algae were detected (USACE 2006b, 2007a).

#### **2.9.4.6. Water Quality Trends (1980 - 2006)**

Water quality trends in Lake Sakakawea over the period between 1980 and 2006 were determined for transparency, total phosphorus, chlorophyll *a*, and nutrient status. The assessment was based on near-surface water sampling from May through October at the Government Bay monitoring site. Total phosphorus concentrations increased slightly, and levels of chlorophyll *a* decreased slightly. Over the 26-year period, transparency did not change significantly, and the lake has generally remained in a mesotrophic state (USACE 2006b, 2007a).

#### **2.9.5. MANAGEMENT MEASURES TO PRESERVE COLD WATER HABITAT**

Lake Sakakawea contains coldwater fishery habitat, which has water temperatures at or below 15° C (59° F) and dissolved oxygen concentrations of at least 5 mg/l (5 parts per million). The coldwater habitat supports Chinook salmon and rainbow smelt. Rainbow smelt is the main forage species for most sport fish in the lake, including salmon and walleye. As the lake elevation falls, less coldwater habitat is available at lower lake depths during the summer. The most crucial period for coldwater habitat is in late summer, when the low, coldwater layer decreases in both volume and dissolved oxygen concentrations. Normally, a lake surface elevation of 1825 feet mean sea level (msl) is needed in late summer to sustain the coldwater fishery, but by April 2005, the pool level in Lake Sakakawea was only 1808.7 feet msl. The coldwater habitat was expected to be further reduced because Garrison Dam’s intake structure releases water primarily from lower lake elevations (very cold water). This reduces the volume of the coldwater layer; increases temperature in the coldwater layer due to warm water from above replacing the released cold water; and enhancing the movement of water with higher oxygen demands and low dissolved oxygen concentrations along the reservoir bottom from the upper reaches to the dam. During 2003 through 2006, the minimum estimated coldwater habitat occurred in late September just prior to fall turnover of Lake Sakakawea (USACE 2006c, 2007a).

Emergency water quality management measures were planned, designed, and constructed by a multi-disciplinary team from the State of North Dakota, the U.S. Fish and Wildlife Service, and the Corps in less than 5 months and at a cost of under \$150,000. The team’s plan raised the temperature of the release water by withdrawing it from a higher elevation within the lake. This was accomplished by: 1) modifying the trash racks on the intakes to two of the five penstocks; 2) closing two of the 10 passage gates to restrict the opening to the dam’s power tunnels; and 3) altering daily flow release patterns. Plywood was attached to the front of the trash racks and covered the lower 48 feet of the 100-foot trash racks, except for a 3-inch slot at the bottom to pass sediments. Plywood was used because it functioned like steel plating but had a lower cost and was locally available.

Construction of these measures was completed by the Corps on July 20, 2005, in time to meet mid-summer coldwater fishery habitat needs. The estimated volume of coldwater

habitat  $\leq 15^{\circ}\text{C}$  that was retained in the lake between July and September that would have been discharged without the modifications was nearly 380,000 acre-feet in 2005 and over 1 million acre-feet in 2006 (USACE 2007a). Water flowing through the two modified penstocks was generally between  $15$  and  $19^{\circ}\text{C}$ , up to  $4^{\circ}\text{C}$  ( $7^{\circ}\text{F}$ ) warmer than water in the other three penstocks. These temperatures were high enough: 1) to indicate that much coldwater habitat was being preserved in the lake; and 2) to warm the Missouri River, thereby improving habitat for threatened and endangered species downstream. Because colder water flowed through the other three penstocks, other water uses continued to be met. These uses included cold water supply for the Garrison National Fish Hatchery and cooling water for the Garrison Dam hydroelectric power plant and three coal-fired power plants downstream.

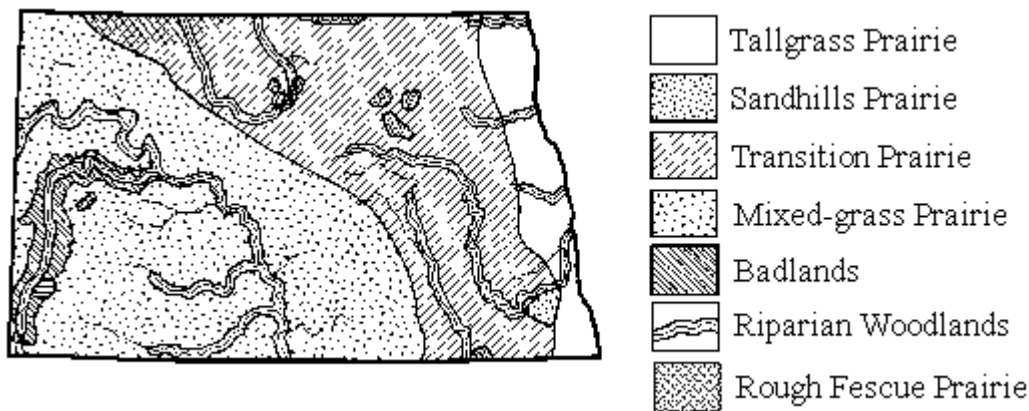
There are no significant water quality concerns regarding water discharged through Garrison Dam from October 2004 through September 2006. No dissolved oxygen measurements during 2005 and 2006 were below  $5\text{ mg/l}$ , due to the effectiveness of the short-term water quality management measures. Although 19 percent of the water temperature measurements exceeded  $15^{\circ}\text{C}$ , none exceeded  $19^{\circ}\text{C}$  (USACE 2006c, 2007a). Overall, the temperature of water passed through Garrison Dam and discharged into the Missouri River during July through September in 2005 and 2006 averaged approximately  $2^{\circ}\text{C}$  warmer than in previous years (USACE 2007a). These water temperatures are believed to be adequate to support the cold and cool water fishery that exists in the Garrison Dam tailwaters. Dissolved oxygen concentrations measured at the Garrison power plant from mid-July through September during 2005 and 2006 were higher than those measured in 2003 and 2004. This showed that the short-term water quality management measures implemented in 2005 and 2006 allowed water from the upper layer, higher in dissolved oxygen, to be drawn into the intake and discharged from the dam, preventing dissolved oxygen levels from falling below the ND standard of  $5\text{ mg/l}$  in the Missouri River immediately downstream of Garrison Dam (USACE 2006c, 2007a). In May 2007, plywood was installed on the the third intake. Continued implementation of the short-term water quality measures were estimated to have retained in the lake approximately 828,000 acre-feet of coldwater habitat  $\leq 15^{\circ}\text{C}$  in July and August 2007 that would have been discharged without the modifications (USACE 2007b, 2007c). The short-term water quality management measures implemented in 2005 through 2007 will be implemented again in later years, depending on the occurrence of low pool levels associated with drought conditions and other factors, based on the demonstrated effectiveness of continuing the measures (USACE 2007b).

## **2.10. VEGETATION ASSOCIATIONS**

### **2.10.1. REGIONAL VEGETATION ASSOCIATIONS IN NORTH DAKOTA**

The vegetation around the lake varies by area; however, the regional vegetation association is classified as Wheatgrass-Needlegrass, or Mixed-grass Prairie. Figure 2.10.1 displays the statewide vegetation configuration for North Dakota.

**Figure 2.10.1. Regional vegetation description for North Dakota.**



Source: Kevin K. Sedivec and William T. Barker, *Selected North Dakota and Minnesota Range Plants*, 1998.

### 2.10.2. UPLAND PRAIRIE

This plant association intersects only the outer perimeter of the project boundary and is prevalent on project land in Dunn and McKenzie Counties. Some remnants exist in Williams, McLean, and Mountrail Counties as well. In general, plant communities are a mixture of short and mid prairie grasses, sedges, and forbs. The harsh environmental factors, particularly low precipitation, produce conditions to which grasses are best adapted, resulting in a grassland climax community.

These grasslands exist mainly on the upland ridge tops of the project lands and extend outward from the project onto adjacent private lands. They are located on shallower soils that have slopes of up to 15 percent. In the undisturbed areas of the project, native grasses include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), western wheatgrass (*Pascopyrum smithii*), Slender wheatgrass (*Agropyron trachycaulum*), prairie junegrass (*Koeleria cristata*), threadleaf sedge (*Carex filifolia*), and green needlegrass (*Stipa viridula*) are the dominant species (USACE 1978).

Sites dominated with clay soils have scattered broomweed (*Amphiachyris dracunculoides*), rabbitbrush (*Ericameria nauseosa*), saltbrush (*Atriplex canescens*), six-week fescue (*Vulpia octoflora*), saltgrass (*Distichlis spicata*), burning bush (*Euonymus atropurpureus*), and Pursh seepweed (*Suaeda calceoliformis*). The drier, generally south-facing slopes, support a plant community comprised primarily of purple sandgrass (*Triplasis purpurea*), soapweed yucca (*Yucca glauca*), plains prickly pear (*Opuntia polyacantha*) and occasionally various rose species. On more sandy soils, needle-and-thread grass (*Stipa comata*) and sideoats grama (*Bouteloua curtipendula*) dominate (USACE 1978).

These areas are subject to overgrazing and damage by motor vehicles if not managed properly. In disturbed areas, brome grass, various annual foxtail species, crested wheat grass, cheatgrass and other exotics are commonly found. Many of these areas have

grazing leases on them. There are agricultural leases on many of the sites with the best soil types. Small grains (e.g. wheat) and oil seed crops (e.g. sunflowers) are raised on these sites. While scattered around the lake, the heaviest concentrations of agricultural lands are in the eastern and western ends of the lake where the rolling glacial till and alluvial soils are most common.

In general, the upland grassland is not suitable for extensive reforestation projects, although several pine plantings exist south of the lake between the Little Missouri Recreation Area and Killdeer, ND. Any natural undisturbed prairie should be preserved rather than attempting to introduce new plant communities.

### **2.10.3. BADLANDS**

The badlands exists in all of McKenzie and Dunn Counties and to a lesser degree in western McLean, Mercer, and Mountrail Counties, and in eastern Williams County. The river drainages of the Little Missouri River and western portions of Lake Sakakawea offer the best examples of badlands (USACE 1978).

The badlands are sparsely vegetated, with barren areas where soil is not developed on steep slopes. The vegetative cover depends on the depth of soil, orientation, slope, and salinity characteristics of each site. The badlands are the most ecologically sensitive land type in the project area due to lack of soil or soil fragility and steep slopes. They serve wildlife as transition zones, located between upland prairie types and bottomlands thus providing escape routes and shelter from the open, windy areas. Farming and slope reforestation are not practical in the badlands due to soil fragility and/or lack of soil.

### **2.10.4. DRAINAGE BOTTOMS**

Drainage bottoms vary from the broad floodplains around Williston, ND to soils formed in small drainage ways or streams in the badlands. The soils are deep and fairly level. A plant community of green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), boxelder (*Acer negundo*), skunk bush (*Rhus trilobata*), wolfberry (*Symphoricarpos occidentalis*), western wild rose (*Rosa woodsii*), juneberry (*Amelanchier alnifolia*), buffalo currant (*Ribes odoratum*), chokecherry (*Prunus virginiana*), and wild plum (*Prunus americana*) comprises the overstory. Western wheatgrass (*Pascopyrum smithii*), Virginia wild rye (*Elymus virginicus*), green needlegrass, big bluestem, poison ivy (*Toxicodendron radicans*), wild strawberry (*Fragaria virginiana*), violets (*Oxalis violacea*), and wild parsley (*Lomatium orientale*) fill in the understory. Prairie sage (*Artemisia ludoviciana*), fringed sage (*Artemisia frigida*), blue grama (*Bouteloua gracilis*), threadleaf sedge and Sandberg bluegrass (*Poa secunda*) grow on the drier benches and south-facing slopes (USACE 1978).

The broader, well-drained areas are used for agriculture or grazing. The smaller areas have tree and grass cover. These plant associations are not as sensitive as other associations because of their deep, fairly level soils; however, they are subject to overgrazing. Further, because of the close proximity to water, mining is considered a negative use that results in impacts to wildlife use and sensitive plant associations. Recreation use is acceptable as long as it is managed in a site-specific manner to avoid

environmental degradation. The major limitation for use is susceptibility to flash flooding.

#### **2.10.5. LOWLAND GRASSLANDS**

Lowland grasslands typically occur where there is generally low, level to rolling terrain with minim erosion down to the lakeshore. Slopes are normally gentle, and extensive subirrigated areas are evident. Major species include prairie cordgrass (*Spartina alterniflora*), long-rooted smartweed (*Polygonum lapathifolium*), wild barley (*Hordeum spontaneum*), salt meadowgrass (*Leptochloa fusca*), quackgrass (*Elytrigia repens*), lady's thumb (*Polygonum persicaria*), giant reedgrass (*Phragmites australis*), big bluestem and several species of dock (*Rumex* spp.) (USACE 1978).

#### **2.10.6. FLOOD PLAINS**

The bottomlands along the Missouri River in western McKenzie and Williams Counties and in eastern McLean and Mercer Counties, where the valley remains natural, contain flood plains. A variation of the flood plain occurs around Lost Bridge on the Little Missouri River in Dunn County.

Over time, a succession of plant communities has historically occupied any given stretch of flood plain. Examples of successional species include cottonwood (*Populus deltoides*), peach-leaved willow (*Salix amygdaloides*), yellow willow (*Salix lutea*), big sandgrass (*Calamovilfa longifolia*), Indian ricegrass (*Achnatherum hymenoides*), and silver scurfpea (*Psoralea argophylla*) (USACE 1978). Flood plain marshes, active sand dunes, islands and riverbanks are first colonized by these species. In time the pioneer species create an environment that is more favorable to green ash, boxelder, American elm, and bur oak (*Quercus macrocarpa*). These species germinate under the protective canopy of willows and cottonwoods and eventually replace them with a climax stand. The pioneer forest canopy tends to be a monoculture dominated by cottonwood. Climax stands show a greater diversity, at least in the overstory. Any one of the climax species may be dominant.

The understory is typically composed of cottonwood-willow stands that tend to have a more open canopy than the climax forest. Climax stands produce a more mesic understory. Stand age, position on the flood plain, soil texture, and nutrient availability are additional factors affecting understory formation. The herbaceous understory is comprised of a number of species, none of which stands out as a dominant. Field horsetail (*Equisetum arvense*), wild licorice (*Glycyrrhiza lepidota*), hog peanut (*Amphicarpa bracteata*), and white sweet clover (*Melilotus albus*) are normally associated with the cottonwood canopy. Pennsylvania sedge (*Carex pennsylvanica*), sweet-scented bedstraw (*Galium odoratum*), smooth brome (*Bromus inermis*), and long-beaked sedge (*Carex sprengelii*) occur below the climax canopy. Tall goldenrod (*Solidago gigantea*) and fringed loosestrife (*Lysimachia ciliata*) are transition zone species (USACE 1978). In general, cottonwood-willow plant communities closely resemble prairie woodland communities, while the ash-elm-boxelder mature forest is similar in appearance and species to the deciduous forests of the eastern United States.

### **2.10.7. WOODLANDS**

There are few types of woodland in the project area. Those that do exist are primarily restricted to deep ravines and steep hillsides of the dissected uplands. Eastern red cedar (*Juniperus virginiana*) is not native to the state of North Dakota and occurs on the project area (NDSU 2003). Bur oak, green ash, and Siberian elm (*Ulmus pumila*) inhabits the hillsides and lower slopes and grades into a bottomland community dominated by eastern cottonwoods, green ash, and boxelder. Willows are commonly found along the lakeshore and in the small drainages. Shrub thickets existing separately and in zones along the woodlands include dogwood (*Cornus racemosa* or *Cornus sericea*), western snowberry (*Symphoricarpos albus*), wild plum, prickly ash (*Xanthoxylum americana*), and smooth sumac (*Rhus glabra*) (USACE 1978).

### **2.10.8. WETLANDS**

Wetlands are transitional areas between permanently flooded deepwater environments and well-drained uplands (USGS 2006a). They include mangroves, marshes (salt, brackish, intermediate, and fresh), swamps, forested wetlands, bogs, wet prairies, prairie potholes, and vernal pools. Wetlands are among the most productive habitats on earth, providing shelter and nursery areas for commercially and recreationally important animals such as fish and wintering grounds for migrating birds (USGS 2006a). The Fish and Wildlife section of Chapter 2 contains a general list of wildlife associated with wetlands. The Lake Sakakawea area has an abundance of the three primary types of wetlands: lacustrine, palustrine, and riverine. Any human activity that places fill material into wetlands requires a permit from the Corps of Engineers, Regulatory Branch (701-255-0015) and a water quality certification from the State of North Dakota prior to the fill being placed.

#### **2.10.8.1. Lacustrine Wetlands**

Lacustrine systems are large lakes or dammed riverine channels containing standing water (Cowardin et al. 1979). Reservoirs do not differ in flooding regime, but differ conspicuously in their geomorphic position. Drought and the dramatic yearly fluctuations in rainfall amounts are characteristic of this region. Reservoirs, in particular, commonly function well below maximum capacity, giving the lacustrine setting a somewhat unaesthetic appearance of a bath-tub ring, dramatically affecting littoral wetlands (Fiedler et al. 1995). Thus the highly variable nature of the water regime of artificial reservoirs is an overwhelming influence on the types of lacustrine-littoral wetland present on their shores and bottoms.

Lacustrine fringe wetlands are located along Lake Sakakawea lakeshores. Here, the water elevation of the lake determines the water table of the adjacent wetland area. Submergent plant species that occur within the project area include Canadian waterweed (*Elodea canadensis*), St. John western waterweed (*Elodea nuttallii*), western marsh cudweed (*Gnaphalium palustre*), sago pondweed (*Stuckenia pectinata*), grassleaf mudplantain (*Heteranthera dubia*), Richardson's pondweed (*Potamogeton richardsonii*), flatstem pondweed (*Potamogeton zosteriformis*), and water mudwort (*Limosella aquatica*). Typical emergent vegetation includes but is not limited to river bulrush (*Schoenoplectus fluviatilis*), horned pondweed (*Zannichellia palustris*), broadleaf cattail

(*Typha latifolia*), wheat sedge (*Carex atherodes*), and Emory's sedge (*Carex emoryi*) (USDA 2006).

Suspended in the open water of lacustrine habitats are microscopic plant-like organisms referred to as phytoplankton. Phytoplankton includes diatoms (the most prevalent type of phytoplankton in Lake Sakakawea), desmids, green algae (including filamentous types), golden algae, dinoflagellates, and blue-green algae (USACE 2006b). Because these tiny plant-like organisms alone carry on photosynthesis in open water, they are the base upon which the rest of lacustrine life depends. Suspended with the phytoplankton are zooplankton (microscopic animals) that graze upon the phytoplankton.

#### **2.10.8.2. Palustrine Wetlands**

Palustrine wetlands include all freshwater wetlands dominated by trees, shrubs, emergents, and emergent mosses and lichens (Cowardin et al. 1979). The palustrine system also includes unvegetated wetlands with all of the following characteristics: 1) an area of less than 20 acres (8 hectares, or ha); 2) no wave-formed or bedrock shorelines; 3) a maximum depth of 6 feet (2 m) during low water; and 4) the water is fresh (salinity is less than 0.5 parts per thousand, or ppt). The palustrine system includes vegetated wetlands commonly called marshes, swamps, bogs, fens, and prairie potholes. It also includes small, shallow, permanent or intermittent water bodies commonly called ponds.

Palustrine wetlands provide cover and forage for wildlife traveling between upland and aquatic habitats. These wetlands are the principal habitat used by breeding waterfowl and other marsh birds and are also heavily used by other migrant waterfowl and shorebirds during both their spring and fall migration. Palustrine wetlands are further divided into eight classes (Cowardin et al. 1979), three of which are common in or near the Lake Sakakawea project area. These three classes of palustrine wetlands are described below.

##### **2.10.8.2.1. Aquatic Beds**

Palustrine aquatic beds include shallow freshwater wetlands vegetated by floating or submerged vegetation (Cowardin et al. 1979). Typical of the plant species found in palustrine aquatic beds are floating vascular plants such as duckweed (*Lemna* spp.) and mosquito fern (*Azolla caroliniana*); and rooted vascular plants such as spatterdock (*Nuphar* spp.), water-lilies (*Nymphaea* spp.), pondweeds (*Potamogeton* spp.) and hornworts or coontail (*Ceratophyllum* spp.) (Cowardin et al. 1979).

##### **2.10.8.2.2. Emergent Wetlands**

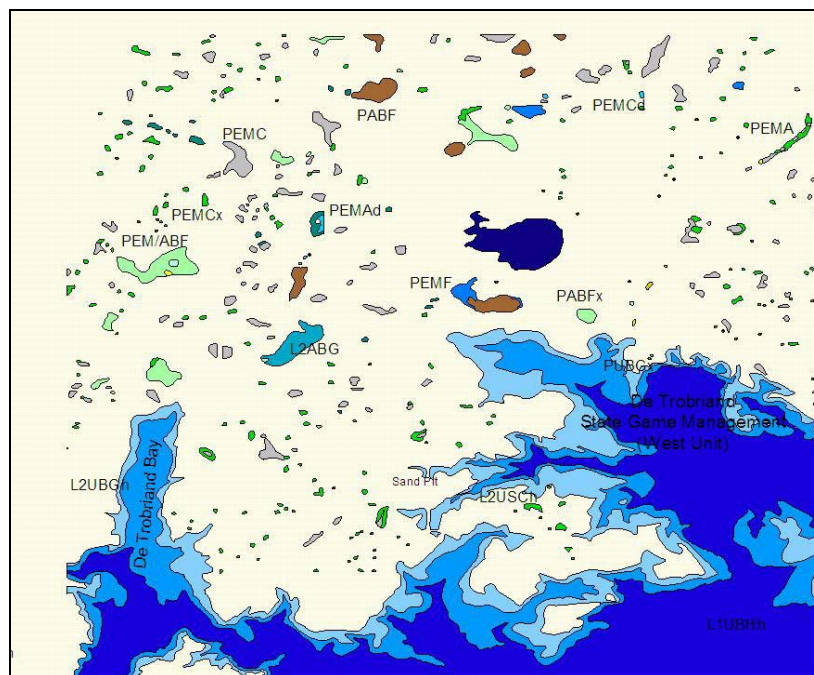
Palustrine emergent wetlands include all freshwater wetlands dominated by rooted erect soft-stemmed plants (Cowardin et al. 1979). Most habitats in this category are freshwater marshes vegetated by plants such as cattail (*Typha* spp.), spike-rushes (*Eleocharis* spp.), arrowhead (*Sagittaria* spp.), rushes (*Juncus* spp.), sedges (*Carex* spp.), bulrushes (*Scirpus* spp.), bur-reed (*Sparganium eurycarpum*), prairie cordgrass (*Spartina pectinata*), and pickerelweed (*Pontederia cordata*). Also included are wet prairies and wet meadows, each of which may contain a wide variety of non-woody plant species.

### 2.10.8.2.3. Prairie Potholes and Other Depressional Wetlands

The Prairie Pothole Region of North America stretches from central Alberta to central Iowa and encompasses well over 270,272 square miles, or 700,000 square kilometers (Kantrud et al. 1989). This region is bounded on the north by the International Boundary, east by the Red and Minnesota river valleys and portions of the western boundaries of Minnesota and Iowa, and on the south and west by headwaters of numerous small streams and rivers along the north and east sides of the Missouri River. A few small areas with prairie potholes lie west of the Missouri River (Kantrud et al. 1989).

These depressional wetlands were formed by glaciers scraping the landscape during the Pleistocene era (NatureServe 2006). This system is typified by several classes of wetlands distinguished by changes in topography, soils, and hydrology. Many of the basins within this system are closed basins, with no stream inflow or outlet. They receive irregular inputs of water from groundwater and precipitation, and they export water as groundwater. Figure 2.10.2 illustrates the distribution of prairie potholes and wetlands in the vicinity of Lake Sakakawea.

**Figure 2.10.2. Distribution of prairie potholes and wetlands near Lake Sakakawea.**



Source: National Wetland Inventory Mapping, U.S. Fish and Wildlife Service.

The vegetation in prairie potholes is influenced by topography, water regime, and salinity (NatureServe 2006). Some prairie pothole marshes are temporary, while others may be essentially permanent. Submerged and floating aquatic plants take over the deeper water in the middle of the pothole, while bulrushes and cattails grow closer to shore. Wet, sedgy marshes lie next to the upland. In addition, because of periodic droughts and wet periods, many wetlands within this system may undergo vegetation cycles. This system



includes elements of emergent marshes and wet, sedge meadows that develop into a pattern of concentric rings.

The Upper Midwest is one of the most important wetland regions in the world because of its numerous shallow lakes and marshes, rich soils, and warm summers. The area is home to more than 50 percent of North American migratory waterfowl, and many waterfowl species are dependent on the prairie potholes for breeding and feeding. Prairie potholes support waterfowl hunting and bird watching; they also reduce the risk and severity of downstream flooding by absorbing surges of rain, snow melt, and floodwaters. Many of these important and highly productive prairie pothole communities have been altered or destroyed by agricultural and commercial development. As a result, only an estimated 40 to 50 percent of the region's original prairie pothole wetlands remain undrained today.

#### **2.10.8.3. Riverine Wetlands**

Riverine wetlands are found in flood plains and riparian zones associated with stream channels. These wetlands are also found within river and stream channels and are strongly influenced by seasonal runoff patterns. When inundated, riverine wetlands provide habitat for water-tolerant plants such as willows and for aquatic animals such as tadpoles and immature fish (Cowardin et al. 1979). Riverine wetlands, in particular, form important habitat for a variety of bird species, such as the bald eagle, wood duck, least tern, and belted kingfisher.

Riparian woodlands have been greatly reduced by extensive clearing of riparian vegetation for agricultural purposes, urbanization, mineral extraction from flood plains and riverbeds, and damming of river valleys. Diversion of river and stream flows, overdrafting of groundwater basins, and the spread of invasive exotic plants have caused degradation of the riparian woodlands that remain. Such destruction of these natural resources has had significant impacts to the ecosystem functions and socio-economic values of these palustrine forests. These plant species include field horsetail (*Equisetum arvense*), scouringrush horsetail (*Equisetum hyemale*), smooth horsetail (*Equisetum laevigatum*), Canada wildrye (*Elymus canadensis*), and Virginia wildrye (*Elymus virginicus*) (Cowardin et al. 1979).

#### **2.10.8.4. Wetland Threats and Impacts**

In aquatic ecosystems, the principal damage has been through indiscriminate artificial drainage, mechanical destruction of plant communities in the undrained wetlands, flooding, and excessive water withdrawals (USGS 1997). These activities destroy the suitability of the substrate to support perennial hydrophytes (water-loving plants). Important secondary effects on wetland ecosystems arise through improper tillage practices, deposition of nutrients and pollutants, and grazing by livestock. In aquatic ecosystems, the principal damage has occurred through artificial drainage, landfill operations, excessive water diversions, and improper disposal of industrial waste.

## 2.11. FISH AND WILDLIFE

### 2.11.1. FISH

#### 2.11.1.1. Lake Sakakawea

The creation of Lake Sakakawea resulted in the conversion of an existing warm-water river fishery to a predominantly cold- and cool-water lake fishery. This large deep reservoir sustains various cold-water fish species such as rainbow smelt (*Osmerus mordax*) and Chinook salmon (*O. tshawytscha*). It is primarily managed for excellent cold- and cool-water sport fishing (USACE 1978). The cold water released in the tailwaters downstream extends conditions for the cold-water fish below the Garrison Dam. Optimal conditions for a cold-water fishery is a water temperature not higher than 15°C (59°F) and at least 5 parts per million of dissolved oxygen. Optimal conditions for a cool-water fishery is a water temperature between 7-24°C (45-75°F) (Holm 2007).

The extended droughts of 1952-1962, 1987-1993, and in the 2000s have caused concern for the cold-water fishery. However, the plant life that grows in the normally inundated lake area during these periods provides cover for spawning and rearing habitat for northern pike (*Esox lucius*) and several other species when the lake returns to more normal water levels (USACE 1978). While there is natural reproduction of these fish, the program also uses Garrison Dam National Fish Hatchery to produce many of the fish. The river fishery still exists at the upper, riverine end of the lake. The delta at the north end of the reservoir provides a nursery for many of the river fish. These areas include fish species preferring warmer water such as shovelnose sturgeon (*Scaphirhynchus platorynchus*), pallid sturgeon (*S. albus*), paddlefish (*S. platorynchus*), northern pike, goldeye (*Hiodon alosoides*), white sucker (*Catostomus commersoni*), longnose sucker (*C. catostomus*), common carp (*Cyprinus carpio*), fathead minnow (*Pimephales promelas*), emerald shiner (*Notropis atherinoides*), catfish (*Ictalurus* spp.), burbot (*Lota lota*), yellow perch (*Perca flavescens*), sauger (*Sander canadense*), and walleye (*Sander vitreus*).

Although the creation of Garrison Dam and other Missouri River main stem dams has provided a multitude of recreational benefits, collectively these changes have dramatically and negatively affected many of the large-river native fish species. These species are well suited for large, turbid river environments once offered by the Missouri River. Because the Yellowstone hydrograph has not yet been totally altered, the outlook for Sakakawea-Yellowstone paddlefish is more favorable than for other large-river species.

Annual fish sampling is carried out by the North Dakota Game and Fish Department (NDGFD) to: 1) monitor fish health, species diversity and abundance; and 2) detect possible invasions of aquatic nuisance species (see the Terrestrial Invasive Species / Aquatic Nuisance Species section in Chapter 2). The fish sampling results are provided in Table 2.11.1.

**Table 2.11.1. Fish species that have been identified in Lake Sakakawea, 1956-2006.**

Common Name	Scientific Name	Years Recovered Since 1956
Pallid sturgeon	<i>Scaphirhynchus albus</i>	15
Shovelnose sturgeon	<i>Scaphirhynchus platyrhynchus</i>	24
Paddlefish	<i>Polyodon spathula</i>	30
Shortnose gar	<i>Lepisostenus platostomus</i>	10
Goldeye	<i>Hiodon alosoides</i>	50
Lake whitefish	<i>Coregonus clupeaformis</i>	18
Cisco	<i>Coregonus artedii</i>	15
Coho salmon	<i>Oncorhynchus kisutch</i>	8
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	29
Rainbow trout	<i>Oncorhynchus mykiss</i>	26
Brown trout	<i>Salmo trutta</i>	19
Lake trout	<i>Salvelinus namaycush</i>	10
Rainbow smelt	<i>Osmerus mordax</i>	34
Northern pike	<i>Esox lucius</i>	50
Common carp	<i>Cyprinus carpio</i>	50
Brassy minnow	<i>Hybognathus hankinsoni</i>	4
Western silvery minnow	<i>Hybognathus argyritis</i>	27
Plains minnow	<i>Hybognathus placitus</i>	21
Fathead minnow	<i>Pimephales promelas</i>	40
Creek chub	<i>Semotilus atromaculatus</i>	17
Flathead chub	<i>Platygnathus gracilis</i>	15
Sicklefin chub	<i>Macrhybopsis meeki</i>	1
Golden shiner	<i>Notemigonus crysoleucas</i>	26
Emerald shiner	<i>Notropis atherinoides</i>	32
Common shiner	<i>Notropis cornutus</i>	9
Sand shiner	<i>Notropis stamineus</i>	5
Spottail shiner	<i>Notropis hudsonius</i>	28
Red shiner	<i>Cyprinella luetrensis</i>	1
Northern redbelly dace	<i>Phoxinus eos</i>	4
River carpsucker	<i>Carpionodes carpio</i>	48
Longnose sucker	<i>Catostomus catostomus</i>	11
White sucker	<i>Catostomus commersoni</i>	50
Blue sucker	<i>Cycleptus elongatus</i>	15
Smallmouth buffalo	<i>Ictiobus bubalus</i>	43
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	49
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	48
Black bullhead	<i>Ameiurus melas</i>	49
Channel catfish	<i>Ictalurus punctatus</i>	50
Flathead catfish	<i>Pylodictis olivaris</i>	3
Stonecat	<i>Noturus flavus</i>	24

Tadpole madtom	<i>Noturus gyrinus</i>	15
Burbot	<i>Lota lota</i>	39
Brook stickleback	<i>Culaea inconstans</i>	7
White bass	<i>Morone chrysops</i>	37
Green sunfish	<i>Lepomis cyanellus</i>	3
Pumpkinseed	<i>Lepomis gibbosus</i>	9
Orangespotted sunfish	<i>Lepomis humilis</i>	9
Bluegill	<i>Lepomis macrochirus</i>	6
Smallmouth bass	<i>Micropterus dolomieu</i>	35
Largemouth bass	<i>Micropterus salmoides</i>	1
White crappie	<i>Pomoxis annularis</i>	50
Black crappie	<i>Pomoxis nigromaculatus</i>	50
Iowa darter	<i>Etheostoma exile</i>	7
Johnny darter	<i>Etheostoma nigrum</i>	32
Yellow perch	<i>Perca flavescens</i>	50
Walleye	<i>Sander vitreus</i>	50
Sauger	<i>Sander canadense</i>	50
Freshwater drum	<i>Aplodinotus grunniens</i>	50

The Garrison Dam National Fish Hatchery is the largest walleye and northern pike producing facility in the world and is located at the base of Garrison Dam. Fish production at the hatchery can exceed 15 million fingerling and catchable fish per year. The principal fish species raised at the hatchery are walleye, northern pike, pallid sturgeon, rainbow trout and Chinook salmon (Holm 2007). Additional species that may be raised, depending on what fishery managers request, include bluegill, perch, smallmouth bass, crappie, brown trout, lake trout, cutthroat trout, burbot, and paddlefish (Holm 2007). The NDGFD stocks the fish produced by the hatchery annually in Lake Sakakawea and periodically stocks hatchery-reared walleye in many areas.

Management activities by the Corps and other managing agencies at Lake Sakakawea include monitoring, maintaining, and improving fishery habitat. Within North Dakota (ND), Lake Sakakawea is an especially good cool-water fishery for walleye and an especially good cold-water fishery for Chinook salmon. During periods of drought, when the lake elevations fell during 2004-2006, the Corps and other agencies successfully collaborated to minimize the reduction in cold-water fishery habitat, as explained in the Water Quality section of Chapter 2. In addition, the Garrison Dam tailrace is an excellent fishery for channel catfish (NDGFD 2005a). The Van Hook Arm and the reach of Lake Sakakawea from New Town to White Tail Bay is an excellent walleye, sauger, and northern pike fishery. Several fish species, including common carp, use the shallow weedy areas at the upper ends of embayments for spawning.

Table 2.11.2 presents the estimated number of ND resident and non-resident anglers during the 2001-2002 season, direct expenditures, and indirect (secondary) economic effects, often referred to as “multiplier effects”, that occur as the direct expenses are re-spent within ND. Direct expenditures include variable expenses for nondurable goods

and services, and fixed expenditures for durable goods. The gross business volume (total economic effects) is a combination of direct and secondary economic effects. The NDGFD conducted separate mail surveys for resident open water fishing, ice fishing, and darkhouse spearing activities; non-resident anglers were surveyed as one group (Bangsund and Leistritz 2003a, 2003b).

**Table 2.11.2. Economic Contributions of Fishing Activities in North Dakota, 2001-2002.**

<b>Type of Angler or Econ. Effect</b>	<b>Estimated ND Resident Anglers</b>	<b>Estimated Non-resident Anglers</b>	<b>ND Resident Expenditures (Dollars)</b>	<b>Non-resident Expenditures (Dollars)</b>	<b>Total \$ Expenditures in ND</b>
Open water fishing*	116,828	n.a. (not applicable)	238,276,900	23,192,800	261,469,700
Ice fishing*	50,948	n.a.	31,537,900	8,704,900	40,242,800
Darkhouse spearing*	930	n.a.	419,300	n.a.	419,300
Total active anglers*	121,612	36,099			
Total direct expenditures			270,234,100	31,897,700	302,131,800
Indirect econ. effects			306,653,000	39,264,000	345,917,000
Gross business volume			576,887,100	71,161,700	648,050,800

\*Resident anglers estimated from license sales times participation rate for type of angler.

Source: Bangsund and Leistritz 2003a, 2003b.

#### **2.11.1.2. Lake Sakakawea Headwaters**

Lake Sakakawea's headwaters area is generally the area from U.S. Highway 85 downstream to the Lewis and Clark State Park area (Power et al. 2000). The Headwaters are a transition zone where a river's flowing water slows down and becomes part of slack water at the upper end of a reservoir. The boundary of the headwaters varies depending on factors such as the reservoir level and the magnitude of inflows.

Since the U.S. Army Corps of Engineers (Corps) acquired fee title to all land that would potentially flood if Lake Sakakawea was at full pool, all of the headwaters area and immediate shoreline is owned by the Corps (Power et al. 2000). Much of the Corps land along either side of U.S. Highway 85 is leased to and managed by the NDGFD as the Lewis and Clark Wildlife Management Area (WMA). Since high lake levels and high inflows often flood this land, agricultural use or development within the flood plain is often difficult. Wildlife populations fluctuate considerably, but the area generally contains substantial numbers of white-tailed deer, pheasants, and other species.

Regardless of the exact boundary, Lake Sakakawea's headwaters area is an important aquatic habitat. It receives a tremendous amount of silt and nutrients from the

Yellowstone and Missouri rivers. Highly turbid Yellowstone River water usually creates a "mud line" visible at times well past the New Town area in Lake Sakakawea (Power et al. 2000). As sediment settles, it has filled in virtually the entire old Missouri River channel in the upper end of Lake Sakakawea. As a consequence, much of the headwaters are a broad, shallow, silt-bottomed flood plain. Annual nutrient and sediment inputs are considered critically important to the productivity of upper Lake Sakakawea. Lower lake levels allow for regrowth of terrestrial vegetation, which becomes important aquatic habitat when the lake level rises and floods the revegetated area, if cattle are excluded.

Although the overall ecological value to most fish inhabiting Lake Sakakawea and the Missouri River upstream of the headwaters is not yet well known, its value for paddlefish is beyond doubt (Power et al. 2000). Beginning in 1991, research efforts have documented extensive seasonal use of a small portion of the headwaters area by paddlefish, especially young-of-the-year and yearlings. Results from a radio-telemetry project indicate the headwaters area is seasonally used by adult paddlefish. Some of the area's value to paddlefish might simply relate to its "remoteness."

There is currently little boating and open water angling on the entire upper end of Lake Sakakawea west of Lewis and Clark State Park because of lack of access and extremely turbid water throughout much of the recreational season. Turbid water limits desirability for boating and recreation, and it also limits the number of walleye and other sight-feeding fish that use the area (Power et al. 2000). Because of Lake Sakakawea's fluctuating water level, and the annual sediment load in the Yellowstone River, silt will continue to build a delta at the lake's upper end. Regardless, the headwaters will remain a critically important area on the Missouri River System in North Dakota.

#### **2.11.2. WILDLIFE ASSOCIATED RECREATION ACTIVITIES**

Wildlife-associated recreation activities are important at the Lake Sakakawea project and in North Dakota. Approximately 35 percent of ND residents at least 16 years old participated in hunting, fishing, or both in 2001, the fifth-highest percentage among the 50 states (USFWS and U.S. Census Bureau 2002). For many game species, the number of non-residents hunting in ND has increased even more rapidly than ND resident hunters (Bangsund et al. 2004; Harmoning 2007). Table 2.11.3 presents the average number of days spent hunting during the 2001-2002 season, direct expenditures, and indirect economic effects as the direct expenses are re-spent within ND. Information regarding numbers of licenses for ND residents and non-residents is presented later in this subchapter, as each type of game is discussed.

**Table 2.11.3. Economic Contributions of Hunting Activities in North Dakota, 2001-2002.**

<b>Game Hunted or Econ. Effect</b>	<b>Estimated ND Resident Hunters*</b>	<b>ND Resident No. Hunting Days/season</b>	<b>ND Resident Expenditures (Dollars)</b>	<b>Non-resident Expenditures (Dollars)</b>	<b>Total Expenditures in ND</b>
Deer	110,480	4 - 13	47,795,300	2,161,100	49,956,400
Antelope	1,857	2 - 5	1,140,400	60,600	1,201,000
Other big game	375	5	348,300	n.a. (not applicable)	348,300
Furbearer	25,708	11	14,662,100	n.a.	14,662,100
Small upland game	52,749	9	38,114,900	10,833,100	48,948,000
Waterfowl	35,215	8	28,514,200	20,907,600	49,421,800
Turkey	7,842	3 - 4	1,846,200	n.a.	1,846,200
Total direct expenditures			132,421,300	33,962,400	166,383,700
Indirect econ. effects			154,435,000	44,548,000	198,983,000
Gross business volume			286,856,300	78,510,400	365,366,700

\* Estimated from license sales times participation rate of 51-95.9% (varies with species).

Source: Bangsund and Leistritz 2003a, 2003b.

Wildlife watching has increased in popularity in ND. Approximately 93,000 people 16 years of age or older (adults) took trips away from home, for a total of about 523,000 days (5.6 days per adult), to observe, photograph, and/or feed wildlife in ND in 2001; of these, adult ND residents accounted for approximately 396,000 days (76 percent). Expenditures in ND related to wildlife watching in 2001 by ND residents and non-residents totaled approximately \$27 million, of which about \$9.4 million was for trip-related expenses and about \$17.7 million was for equipment and other items (USFWS and U.S. Census Bureau 2002). Approximately 12 percent of overnight pleasure trips in ND made by ND residents and 7 percent made by non-residents included viewing wildlife; these percentages rose to 18 and 9 percent, respectively, for overnight marketable (influenced by advertising) trips in ND (Longwoods International 2005).

The Lake Sakakawea project contains a variety of habitat types, including woodlands, grasslands, open fields, shorelines, and wetlands. This variety of habitats maximizes the diversity of species that can be viewed, photographed, or hunted at various seasons of the year. Major types or species of wildlife that are year-round or transient residents of each management area at Lake Sakakawea are included in the Fish and Wildlife paragraph for that area in Chapter 7. The previous paragraphs and table 2.11.3 demonstrate how

important fish and wildlife, and high-quality fish and wildlife habitat, are to North Dakota residents and visitors. Yet the proportions and carrying capacities of the various types of wildlife habitat at the Lake Sakakawea project have been altered since impoundment. A total of 88,001 acres of woodlands (Johnson and Goodman 1962) were acquired for the Garrison Dam project, and most of the dense cottonwoods, willows, ash, boxelder, buffaloberry, dogwood, and other shrubs that comprised these woodlands were inundated by Lake Sakakawea (USACE 1978). The loss in wildlife and waterfowl habitat had not yet been offset as of 1962 (Johnson and Goodman 1962), and the bottomland woodlands lost can not be fully replaced. However, measures have been and continue to be implemented at the Lake Sakakawea project to restore wildlife and waterfowl habitat. The General Plan for Fish and Wildlife Management provides for nearly all lands surrounding Lake Audubon to be included in either the USFWS-managed Audubon NWR (14,735 acres of land and water) or the NDGFD-managed Audubon WMA (11,285 acres of land and water). The General Plan also sets aside approximately 51,000 additional acres of federally-owned land at Lake Sakakawea for wildlife conservation and management, with each tract managed by the Corps until the NDGFD requests to assume management. The three agencies previously mentioned, along with other entities, have been replacing flood plain vegetative types and densities through water level manipulations, plantings, and/or other methods wherever soil and water conditions permit and have greatly improved wildlife habitat values of project lands and waters since the reservoir first filled. Their dedicated efforts and applications of scientifically researched management techniques have greatly benefited not only wildlife, but also the recreating public. Information regarding specific activities at the Audubon NWR, the WMA's, and the Corps-managed Wildlife Areas are provided in Chapter 7.

### **2.11.3. MAMMALS**

The project area and adjacent lands contain diverse habitats that support many species of mammals. Areas at the Lake Sakakawea project with a land classification of Multiple Resource Management (MRM): Wildlife Management, which includes NDGFD-managed WMA's and Corps-managed Wildlife Areas, have resource objectives and development needs designed to actively manage and improve habitat for diverse species of wildlife. These are a continuation of previous wildlife habitat enhancement efforts on project lands, which have resulted in increases in game and non-game wildlife populations since the initial filling of Lake Sakakawea. Thriving wildlife populations have in turn influenced the number of individuals participating in hunting and wildlife viewing activities (Bangsund et al. 2004).

Large mammals that occupy project lands and surrounding lands include white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), moose (*Alces alces americanus*), and pronghorn antelope (*Antilocapra americana*). Bison (*Bison bison*) were once a common feature of this ecoregion but have been extirpated from the region (are locally extinct). Grazing by ungulates, fire, and drought were major sources of disturbance. The primary big game species in the region include mule deer, white-tailed deer, bighorn sheep, and pronghorns. Mountain lions (*Puma concolor*), extirpated from ND in 1902, have been making a comeback in the state in recent years (NDGFD 2006). Between 2001 and 2005, there were 46 verified reports of mountain lions in ND



(NDGFD 2006). Although the majority of these reports occurred in the Badlands southwest of the Lake Sakakawea project, the NDGFD has identified the Missouri River Breaklands ecoregion along Lake Sakakawea as suitable mountain lion habitat (NDGFD 2006). In 2007, a mountain lion was sighted near the entrance road to New Town Marina (Good Bird 2007), and in future years, mountain lions may be found elsewhere along Lake Sakakawea. American elk/wapiti (*Cervus elaphus*) were also thought to have been extirpated from the region, but they have been observed using bottomlands in the Little Missouri Arm as a wintering area. Mammals that have been extirpated from the region include black bear (*Ursus americanus*), grizzly bear (*U. arctos*), mountain sheep (*Ovis canadensis*), wolverine (*Gulo gulo*), and caribou (*Rangifer tarandus*) (ASM 2001).

Hunting of big game using firearms or archery is an important fall recreation activity on project lands. Although no data are available for harvests and days of hunting on project lands, these appear to follow statewide trends. The average annual number of ND resident and non-resident deer hunters increased from an estimated 73,575 during the 1982-1986 period to 93,646 during the 1996-2000 period (Bangsund et al. 2004). The number of deer hunting licenses in ND increased from 123,110 in 2001 to 163,042 in 2005 (Harmoning 2007). Between 1990 and 2005, the number of licenses for hunting pronghorn antelope in ND nearly doubled, increasing from 3,980 to 7,099, although only about 1,000 to 2,000 licenses were sold annually from 1997 through 2002 (Harmoning 2007).

Examples of small mammals common to this region are cottontail rabbit (*Sylvilagus floridanus*), white-tailed jackrabbit (*Lepus townsendii*), little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), masked shrew (*Sorex cinereus*), short-tailed shrew (*Blarina brevicauda*), woodchuck (*Marmota monax*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), gray squirrel (*Sciurus carolinensis*), red squirrel (*Tamiasciurus hudsonicus*), plains pocket gopher (*Geomys bursarius*), plains pocket mouse (*Perognathus flavescens*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), prairie vole (*Microtus ochrogaster*), porcupine (*Erethizon dorsatum*), house mouse (*Mus musculus*), and black-tailed prairie dogs (*Cynomys ludovicianus*) (Grondahl 1997).

Fur bearers identified within this region include beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), mink (*Mustela vison*), least weasel (*M. nivalis*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and bobcat (*Felis rufus*) (ND Furtakers Association and NDGFD 1997).

Big game, small mammals, and furbearers are found throughout the land areas of the Lake Sakakawea project. Especially large prairie dog towns may be found on project lands in the Little Missouri Arm.

Hunting of small mammals has increased in ND because increased amount and quality of wildlife habitat combined with mild winter weather has resulted in increased wildlife populations (Bangsund et al. 2004). From the standpoint of hunting licenses and regulations, rabbits, gophers, porcupines, prairie dogs, and skunks are considered non-game species, for which ND residents need no hunting license; tree squirrels are considered small/upland game species; and coyote and fox are considered furbearers (NDGFD 2005b). Between 1990 and 2005, non-resident licenses sold for hunting furbearers and non-game species in ND increased nearly 6-fold (from 346 to 1,989) and over 22-fold (from 56 to 1,259) respectively (Harmoning 2007). The increase in hunting of small mammals and upland game birds by ND residents can not be tracked directly by license sales because ND residents need no license for non-game species and since 1992 have been able to use a “sportsmen’s combo”, which includes small/upland game, general game, furbearer, and fishing licenses, instead of a separate furbearer and/or small/upland game license (NDGFD 2005b).

#### **2.11.4. BIRDS**

The diverse habitat on the Garrison project attracts a large variety of birds. Of the 365 bird species known or hypothesized to occur in ND (Faanes and Stewart 1982), over 245 species have been recorded as occurring within the Garrison project. About 15 percent of the 245 bird species are year-round residents at Lake Sakakawea (USACE 1992). The following sections illustrate the diversity of bird species found within and surrounding the project area. A comprehensive species list can be obtained by contacting the U.S. Fish and Wildlife Service (USFWS).

##### **2.11.4.1. Birds of Prey**

These birds are often referred to as raptors. These species include golden eagles (*Aquila chrysaetos*), osprey (*Pandion haliaetus*), northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*A. striatus*), Cooper’s hawk (*A. cooperii*), red-tailed hawk (*Buteo jamaicensis*), Swainson’s hawk (*B. swainsoni*), rough-legged hawk (*B. lagopus*), ferruginous hawk (*B. regalis*), northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), peregrine falcon (*F. peregrinus*), merlin (*F. columbarius*), American kestrel (*F. sparverius*), great horned owl (*Bubo virginianus*), burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), snowy owl (*Nyctea scandiaca*), eastern screech-owl (*Otus asio*) (NDPRD 2004) and bald eagle (*Haliaeetus leucocephalus*).

##### **Bald Eagles**

A small portion of central ND is considered a breeding range for the bald eagle, including the river flood plains in southern McLean, Mercer, Oliver, Burleigh, and Morton counties (USFWS 1983).

The bald eagle was removed from the list of threatened and endangered species on June 29, 2007. Upon delisting, the U.S. Fish and Wildlife Service will continue to work with state wildlife agencies to monitor eagles for at least five years, as required by the Endangered Species Act. If at any time it appears that the bald eagle again needs the Act’s protection, the U.S. Fish and Wildlife Service can propose to re-list the species.

The bald eagle remains protected by the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). In July 2007, the National Bald Eagle Management Guidelines (the Guidelines) (72 FR 31156 31157) were released for public review to identify certain human-caused impacts to bald eagles that are still prohibited by law. Commercial and residential development, forestry practices, outdoor recreation, natural resource recovery operations, and other human activities can potentially interfere with bald eagles or permanently degrade or destroy bald eagle nesting, roosting, and foraging areas (USFWS 2006a). In some cases, such impacts amount to violations of the provisions of the BGEPA and/or MBTA that protect bald eagles. The USFWS developed the Guidelines to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the BGEPA may apply to them. The Guidelines were designed to promote the continued conservation of the bald eagle following its removal from the Federal List of Endangered and Threatened Wildlife and Plants (protection under the ESA).

The Guidelines are intended to:

- (1) Publicize the provisions of the BGEPA that continue to protect bald eagles, in order to reduce the possibility that people will violate the law;
- (2) Advise landowners, land managers, and the general public of the potential for various human activities to disturb bald eagles; and
- (3) Encourage land management practices that benefit bald eagles and their habitat.

During the critical nesting periods, construction activities and other forms of disturbance should not be permitted within  $\frac{1}{4}$  mile of the active nest tree or perch trees if the activity is not visible from the nest (BLM 2006). If the eagles have line-of-sight vision from these trees to the construction activities or other types of disturbance, the distance is one-half ( $\frac{1}{2}$ ) mile (USFWS 2006a). The presence of human activity in this area will usually cause nesting disturbance. The period from initiation of nest selection to one month after hatching is considered an “extremely sensitive” period, in which activity in the nest site may cause eagles to desert the nest. The Guidelines offer detailed recommendations for the protection of the bald eagle and should be consulted prior to permitting activities that may disturb areas near nest sites.

#### **2.11.4.2. Land Birds**

##### **2.11.4.2.1. Land Game Birds**

Game bird species commonly found within or surrounding the Garrison project area include sharp-tailed grouse (*Tympanuchus phasianellus*), turkey (*Meleagris gallopavo*), mourning dove (*Zenaida macroura*), Hungarian partridge (*Perdix perdix*), and ring-necked pheasant (*Phasianus colchicus*) (NDPRD 2004; Halstead 2007).

In ND, grouse, mourning doves, Hungarian partridge, ring-necked pheasant, snipe, woodcock, and sandhill cranes (as well as squirrels) are classified as small/ upland game (NDGFD 2005b). Small/upland game has flourished in ND, partly due to increased quantity and quality of wildlife habitat (Bangsund et al. 2004). Corps management activities on MRM: Wildlife Management General and MRM: Vegetative Management lands include enhancing dense nesting cover and winter cover for upland game birds. On

many NDGFD-managed WMA's at Lake Sakakawea, some food plots were converted to herbaceous cover to increase nesting cover, and other food plots were reduced in size to increase edge effects. These habitat enhancement efforts, along with climatic conditions conducive for game bird production, resulted in a great increase in upland game bird hunting, as reflected by the hunting licenses sold by NDGFD for hunting in ND. Specific data regarding hunting visits and hunting success on project lands is not available. However, the average annual number of ND residents and non-residents hunting pheasants in ND increased by about 50 percent, from 41,311 during the 1982-1986 period to 59,322 during the 1996-2000 period (Bangsund et al. 2004). Small/upland game licenses sold by NDGFD to non-residents quadrupled between 1990 and 2005, from 7,765 to 30,479 (Harmoning 2007). The number of turkey hunting licenses more than doubled (from 5,923 to 14,471) between 1990 and 2006 (Harmoning 2007). Most management areas at Lake Sakakawea that have woody draws and land classifications of MRM: Wildlife Management General or MRM: Vegetative Management have the development of additional woody draw habitat on their list of development needs in Chapter 7; this will increase habitat for wild turkeys. Because insects are critically important to the diet of young upland gamebirds, the NDGFD does not allow the use of insecticides on WMA's within the Garrison project.

#### **2.11.4.2.2. Land Non-game Birds**

Numerous non-game terrestrial bird species (including songbirds and upland shorebirds) are found within or near the project area. Examples of these species include willow flycatcher (*Empidonax traillii*), upland sandpipers (*Bartramia longicauda*), belted kingfisher (*Ceryle alcyon*), marbled godwits (*Limosa fedoa*), long-billed curlews (*Numenius americanus*), red-winged blackbird (*Agelaius phoeniceus*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), swamp sparrow (*Melospiza georgiana*), song sparrow (*M. melodia*), black-billed cuckoo (*Coccyzus erythrophthalmus*), bobolink (*Dolichonyx oryzivorus*), orchard oriole (*Icterus spurius*), pine grosbeak (*Pinicola enucleator*), purple finch (*Carpodacus purpureus*), house finch (*Carpodacus mexicanus*), red crossbill (*Loxia curvirostra*), common redpoll (*Carduelis flammea*), pine siskin (*C. pinus*), chestnut-collared longspur (*Calcarius ornatus*), purple martin (*Progne subis*), bank swallow (*Riparia riparia*), sedge wren (*Cistothorus platensis*), ruby-crowned kinglet (*Regulus calendula*), eastern bluebird (*Sialia sialis*), gray catbird (*Dumetella carolinensis*), brown thrasher (*Toxostoma rufum*), American pipit (*Anthus rubescens*), cedar waxwing (*Bombycilla cedrorum*), yellow warbler (*Dendroica petechia*), American redstart (*Setophaga ruticilla*), common yellowthroat (*Geothlypis trichas*), spotted towhee (*Pipilo maculatus*), chipping sparrow (*Spizella passerina*), lark sparrow (*Chondestes grammacus*), western kingbird (*Tyrannus verticalis*), eastern phoebe (*Sayornis phoebe*), dickcissel (*Spiza americana*), northern shrike (*Lanius excubitor*), solitary vireo (*Vireo solitarius*), horned lark (*Eremophila alpestris*), white-breasted nuthatch (*Sitta carolinensis*), brown creeper (*Certhia americana*), ruby-throated hummingbird (*Archilochus colubris*), red-headed woodpecker (*Melanerpes erythrocephalus*), northern flicker (*Colaptes auratus*), downy woodpecker (*Picoides pubescens*), chimney swift (*Chaetura pelagica*), and common nighthawk (*Chordeiles minor*) (NDPRD 2004).

Wildlife habitat for songbirds has been enhanced by the Corps and NDGFD at many Lake Sakakawea project areas by plantings of native prairie grasses that provide dense nesting cover, shrubs, deciduous trees, and conifers. In addition, non-governmental agencies, quasi-public groups, and private individuals have installed and maintained bluebird nesting boxes at a number of project areas. At WMA's, food plots have replaced wildlife feeders for augmenting wildlife food supplies (Halstead 2007). Many WMA's and Corps-managed Wildlife Areas are used by songbirds throughout the year for brood-raising and over-wintering.

#### **2.11.4.3. Water Birds**

Wetlands habitat provided near Lake Sakakawea is very important because approximately 39 percent of the 353 bird species in ND use wetlands. Of the 223 species with known or inferred breeding status in ND, 57 (26 percent) are marsh or aquatic birds other than waterfowl. Of these 57 species, the whooping crane (*Grus americana*) has been extirpated as a breeding bird in ND but is still present as a migrant. Of the 56 remaining species, only 15 species are generally not associated with the shallow-basin wetlands and prairie potholes, indicating the importance of these shallow wetland habitats for birds in the vicinity of Lake Sakakawea.

##### **2.11.4.3.1. Shorebirds, Gulls, and Terns**

Species that utilize Lake Sakakawea and associated aquatic resources include the ring-billed gull (*Larus delawarensis*), California gull (*L. californicus*), Caspian tern (*Sterna caspia*), common tern (*S. hirundo*), least tern (*S. antillarum*), killdeer (*Charadrius vociferus*), piping plover (*C. melodus*), spotted sandpiper (*Actitis macularia*), Wilson's snipe (*Gallinago delicata*), and American woodcocks (*Scolopax minor*) (NDPRD 2004).

Inlets along the shore and other wetland areas at many management areas at Lake Sakakawea are used in the spring, summer, and fall as a nesting, brood-raising, and staging area for migrating shorebirds. Shorebirds are also commonly found at many sandy beaches along shorelines and islands throughout the Lake Sakakawea project.

Snipes and woodcocks are classified as small/upland game species by the NDGFD for hunting license purposes; refer to the discussion of small/upland game hunting in the Game Birds section of this subchapter. More detailed information about the Federally Listed Endangered interior least tern and Federally Listed Threatened piping plover can be found in the Threatened and Endangered Species section of Chapter 2. Management activities by the Corps, NDGFD, USFWS, the Bureau of Reclamation, and non-governmental organizations have promoted and enhanced wetland habitat for a variety of species at areas classified as MRM: Wildlife Management General at the Lake Sakakawea project. Resource objectives and development needs at the Audubon NWR, the WMA's, and the Corps-managed Wildlife Areas that relate to wetland habitat and to threatened and endangered species are included in Chapter 7.

##### **2.11.4.3.2. Waterfowl**

Waterfowl includes ducks, geese, and swans. Waterfowl species that utilize Lake Sakakawea include Canada geese (*Branta canadensis*), tundra swan (*Cygnus*

*columbianus*), trumpeter swan (*C. buccinator*), wood ducks (*Aix sponsa*), green-winged teals (*Anas crecca*), mallards (*A. platyrhynchos*), northern pintails (*A. acuta*), blue-winged teals (*A. discors*), northern shovelers (*A. clypeata*), gadwalls (*A. strepera*), American wigeons (*A. americana*), ruddy ducks (*Oxyura jamaicensis*), canvasbacks (*Aythya valisineria*), redheads (*A. americana*), ring-necked ducks (*A. collaris*), lesser scaups (*A. affinis*), and hooded mergansers (*Lopodytes cucullatus*) (NDPRD 2004).

Extensive migrations of many waterfowl and other water birds occur along the Central Flyway, which passes through the Lake Sakakawea area. The Central Flyway is a bird migration route that generally follows the Great Plains in the U.S. and Canada. Its end points are generally the Canadian provinces of Alberta and Saskatchewan and the region surrounding the coast of the Gulf of Mexico, but some birds migrate even greater distances, between the Arctic and Patagonia. The great variety of migratory bird species offers good waterfowl hunting opportunities as well as bird watching opportunities at the Lake Sakakawea project.

A number of bays surrounded predominantly by areas managed mainly for wildlife are major staging areas for waterfowl during spring and fall migrations. The inlets along the shore at many areas managed predominantly for wildlife are used in the spring, summer, and fall as nesting, brood-raising, and staging areas. Wetland areas at a number of management areas are used by waterfowl for nesting and brood raising. Waterfowl nesting structures were installed at many WMA's and Wildlife Areas by the managing agencies, non-governmental organizations and groups, and private individuals. However, NDGFD has reduced the number of nesting structures on WMA's because grassland nesting habitat has increased significantly (partly due to plantings for dense nesting cover) and because Canada goose populations exceed population objectives in ND (Halstead 2007).

Hunting of waterfowl (which includes ducks, geese, coots, mergansers, and tundra swans) is an important autumn recreation activity on project lands. From the standpoint of hunting licenses and regulations, most waterfowl are classified as small game (NDGFD 2005b). Although no data are available for harvests and days of hunting on project lands, these appear to follow statewide trends. The average annual number of ND resident and non-resident waterfowl hunters combined increased by an estimated 24,193 between the 1982-1986 and the 1996-2000 time periods (Bangsund et al. 2004). The number of tundra swan hunters in ND remained at about 2000 annually between 1990 and 2006 (Harmoning 2007). Maintaining and improving habitat for waterfowl are important goals at most areas with a land classification of MRM: Wildlife Management General at the Lake Sakakawea project. Development needs listed in Chapter 7 for these wildlife management areas include improving waterfowl habitat by planting food plots, native grasses, and/or marsh grasses to supplement existing food sources; maintaining/managing any wetlands; and constructing water collection ponds where feasible to increase wetland habitat in the area. Wildlife food plots that benefit resident wildlife and migratory waterfowl constitute nearly 30 percent of acres farmed within Lake Sakakawea WMA's. Over 124 nesting islands in Lake Audubon are included in Audubon NWR or Audubon WMA; these islands are an extremely important factor in reducing predation on

waterfowl (Halstead 2007). Manipulation of water levels, prescribed burning, and riprap installation to reduce bank erosion are all important management activities for maintaining the quantity and quality of island nesting habitat that are included in “development” needs for these management areas in Chapter 7.

#### **2.11.4.3.3. Wading Birds**

Wading birds can also be found with waterfowl and shorebirds. Wading bird species identified within the Garrison project area and associated aquatic areas include great blue herons (*Ardea herodias*), snowy egrets (*E. thula*), yellow rail (*Coturnicops noveboracensis*), king rail (*Rallus elegans*), Virginia rail (*R. limicola*), sora (*Porzana carolina*), sandhill crane (*Grus canadensis*), whooping crane (*Grus americana*), American coot (*Fulica americana*), cattle egrets (*Bubulcus ibis*), American bittern (*Botaurus lentiginosus*), little black-crowned night heron (*Nycticorax nycticorax*), and white-faced ibis (*Plegadis chihi*) (NDPRD 2004).

Great blue herons and other fish-eating birds prey in the wetland areas at a number of WMA's and Corps-managed wildlife areas. The whooping crane is a Federally Listed Endangered species, and more detailed information is found in the Threatened and Endangered Species section of Chapter 2. Sandhill cranes are not very common at the Lake Sakakawea project and appear to prefer small depression wetlands located close to large grain fields (Halstead 2007), especially during the spring migration, when water fills small wetlands but Lake Sakakawea is still frozen over (Luttschwager 2007). Coots are considered waterfowl for hunting license purposes (NDGFD 2005b); hunting and habitat information applicable to coots is provided in the Waterfowl section of this subchapter.

#### **2.11.4.3.4. Other Water Birds**

Other water birds identified within the Lake Sakakawea project area and associated aquatic areas include double-crested cormorants (*Phalacrocorax auritus*), western grebes (*Aechmophorus occidentalis*), red-necked grebe (*Podiceps grisegena*), common loon (*Gavia immer*), and white pelicans (*Pelecanus erythrorhynchos*) (NDPRD 2004).

### **2.11.5. AMPHIBIANS AND REPTILES**

Among the 50 states, ND is ranked 49<sup>th</sup> with regard to amphibian and reptile diversity. Only 15 reptile species and 10 amphibian species are found in the state (Moriarty 1997).

#### **2.11.5.1. Amphibians**

Eight amphibian species known to occur in ND are found within the project area. These include plains spadefoot toads (*Scaphiopus bombifrons*), Canadian toads (*Bufo hemiophrys*), Woodhouse's toads (*Bufo woodhousii*), great plains toad (*Bufo cognatus*), western chorus frogs (*Pseudacris triseriata*), northern leopard frogs (*Rana pipiens*), wood frogs (*Rana sylvatica*), and tiger salamanders (*Ambystoma tigrinum*) (Hoberg and Gause 1992).

### **2.11.5.2. Reptiles**

Eleven reptile species are known to occur within the project area. These species include common snapping turtles (*Chelydra serpentina*), smooth softshell turtle (*Apalone muticus muticus*), western painted turtles (*Chrysemys picta belli*), sagebrush lizards (*Sceloporus graciosus*), short-horned lizards (*Phrynosoma douglassi*), bullsnakes (*Pituophis catenifer*), common garter snakes (*Thamnophis sirtalis*), plains garter snake (*Thamnophis radix*), prairie rattlesnakes (*Crotalus viridis*), yellowbelly racers (*Coluber constrictor*), western hognose snake (*Heterodon nasicus*), and smooth green snakes (*Opheodrys vernalis*) (Hoberg and Gause 1992).

Of the reptile species found in North Dakota, only the prairie rattlesnake is poisonous to humans. Some snake species such as the bullsnake and the western hognose snake will hiss loudly, open their mouths wide and attempt to strike as a method of scaring off predators. In the case of the western hognose snake, if this display fails to deter a predator, they will roll over and play dead, with their mouths open and tongues hanging out. These snakes will remain limp and motionless if handled. When placed right side up they will immediately roll over exposing their bellies. Many of these snakes are killed needlessly. Hognose snakes are easily handled and prized as pets (Hoberg and Gause 1992).

### **2.11.6. INVERTEBRATES**

#### **2.11.6.1. Aquatic Invertebrates**

Aquatic invertebrates include aquatic insects, snails, clams, and crustaceans. These organisms have no backbones and spend most or all of their lives in water. Aquatic invertebrates are eaten by other invertebrates and fish as they pass through a larval stage. Individuals that survive to maturity eventually become food to larger vertebrates, such as fishes, reptiles, birds, and mammals. Due to their importance as food to so many animals, aquatic invertebrates are essential not only to aquatic ecosystems, but to terrestrial ecosystems as well.

Studies in ND and Minnesota reveal that aquatic invertebrates play a critical role in the diet of female ducks during the breeding season. Most waterfowl hens shift from a winter diet of seeds and plant material to a spring diet of mainly invertebrates. Waterfowl species depend differentially on the various groups of invertebrates present in prairie wetlands, but a few generalizations are possible. Snails, crustaceans, and insects are important invertebrate groups for ducks that are reproducing. Most species of laying hens rely on calcium from snail shells for egg production. The northern shoveler and gadwall are dependent on crustaceans that swim in the water and forage on algae and fine organic matter. The northern shoveler has an enlarged bill and finely developed lamellae for sieving crustaceans from the water. Early-nesting species such as northern pintails and mallards consume early-emerging midge larvae in addition to earthworms, which are often the most available food in ephemeral wetlands shortly after the snowmelt. The diving ducks consume free-swimming amphipods or larger insects such as caddis fly and dragonfly larvae that tend to occur in deeper water. Managers can use the presence of these invertebrates to determine the effectiveness of water management regimes designed



for waterfowl production (USFWS 1990). Table 2.11.4 represents the phylum, class, and order of aquatic invertebrates located in the Lake Sakakawea region.

**Table 2.11.4. Taxonomic classification of the aquatic invertebrates that serve most management purposes within Lake Sakakawea.**

Phylum	Class	Order
Annelida	Oligochaeta (terrestrial and aquatic earthworms)	
	Hirudinea (leeches)	
Arthropoda	Crustacea	Anostraca (fairy shrimp)
		Conchostraca (clam shrimp)
		Cladocera (water fleas)
		Copepoda (copepods)
		Ostracoda (seed shrimp)
		Amphipoda (scuds and sideswimmers)
	Insecta	Ephemeroptera (mayflies)
		Odonata (dragonflies)
		Hemiptera (true bugs)
		Trichoptera (caddis flies)
		Coleoptera (beetles)
		Diptera (flies and midges)
		Lepidoptera (butterflies and moths)
Mollusca	Gastropoda (snails)	

Mosquito populations are especially high in the headwaters area of Lake Sakakawea. The Corps treats over 24,000 acres annually to control mosquitoes in the vicinity of Williston and the Trenton Indian Service Area under a program authorized by Congress; State of ND programs also monitor and control mosquito populations. Information about mosquitoes, public health concerns regarding certain mosquito species, and mosquito control efforts are detailed in Chapter 3.

#### 2.11.6.2. Phytoplankton

Fifteen individual phytoplankton grab samples were collected from Garrison Reservoir at the near dam, deepwater ambient monitoring site during 2004 through 2006 (USACE 2007a). The following six taxonomic divisions were represented by taxa collected in the phytoplankton samples: Bacillariophyta (Diatoms), Chlorophyta (Green Algae), Chrysophyta (Golden Algae), Cryptophyta (Cryptomonad Algae), Cyanobacteria (Blue-Green Algae), and Pyrrophyta (Dinoflagellate Algae) (USACE 2006d). The general prevalence of these taxonomic divisions in the reservoir, based on taxa occurrence, were Bacillariophyta > Chlorophyta / Cyanobacteria / Cryptophyta / Pyrrophyta > Chrysophyta. The diatoms were the most abundant algae throughout the entire sampling period based on percent composition. Dominant phytoplankton species occurring in the 15 collected samples included the Bacillariophyta *Fragilaria* spp. (11 occasions), *Asterionella* spp. (8 occasions), *Cyclotella* spp. (2 occasions), *Synedra* spp. (1 occasion), *Tabellaria* spp. (3 occasions), *Stephanodiscus* spp. (1 occasion), and *Melosira* spp. (1

occasion); Chlorophyta *Chlamydomonas* spp. (2 occasions) and *Quadridula* spp. (1 occasion); Cryptophyta *Rhodomonas* spp. (7 occasions) and *Cryptomonas* spp. (2 occasions); Pyrrophyta *Peridinium* spp. (1 occasion) and *Ceratium* spp. (2 occasions); and Cyanobacteria *Aphanocapsa* spp. (1 occasion) (USACE 2007a).

#### **2.11.6.3. Zooplankton**

The Corps last collected zooplankton in 2005. The results from this collection of zooplankton species included *Acanthocyclops* spp., *Alona* spp., *Asplanchna* spp., *Bdelloid* spp., *Bosmina* spp., *Brachionus* spp., *Calanoid* spp., *Ceriodaphnia* spp., *Chydorus* spp., *Clad* spp., *Conochiloides* spp., *Conochilus* spp., *Cyclopoid* spp., *Daphnia* spp., *Diacyclops* spp., *Diaphanasoma* spp., *Epischura* spp., *Ergasilus* spp., *Eubosmina* spp., *Euchlanis* spp., *Filinia* spp., *Gastropus* spp., *Harpacticoid* spp., *Hexarthra* spp., *Kellicottia* spp., *Leptodora* spp., *Mesocyclops* spp., *Moina* spp., *Monostyla* spp., *Nauplii* spp., *Notholca* spp., *Ostracod* spp., *Ploesoma* spp., *Polyarthra* spp., *Synchaeta* spp., *Trichocerca* spp., and *Tropocyclop* spp. (USACE 2006d). As of 2006, the Corps no longer sampled for zooplankton.

#### **2.11.6.4. Terrestrial Invertebrates**

North Dakota is primarily an agrarian-based economy with wheat, soybeans, corn, and sugar beets as the main crops (USDA 2006). As such, most data relating to North Dakota's invertebrate populations is focused on issues and problems associated with northern crop, rangeland, and livestock production systems important to the Upper Great Plains states. Therefore, most of the insect species identified within the project area include aphids, leafhoppers, thrips, leaf beetles, blister beetles, leaf-feeding caterpillars, cutworms, grasshoppers, rose slug, rose curculio, spider mites, and sowbugs. Many of these insects have a negative impact on agricultural operations; however, many beneficial insects occur as well throughout the region. Insects are critically important to the diet of young upland gamebirds; thus the NDGFD does not allow the use of insecticides on WMA's within the Lake Sakakawea project.

Additionally, the Department of Entomology at North Dakota State University (NDSU) has been collecting various moth and butterfly species at the Garrison local training area in McLean County since 2003 that are being incorporated into the North Dakota State Insect Reference Collection (NDSIRC). These species may be indicative of moth and butterfly species (Lepidoptera) found throughout the project area. The following species listing includes only some of the butterfly and moth species common to the area. A more comprehensive species list is available at the Department of Entomology, NDSU.

Lepidoptera species collected within the project area include butterfly species such as Dun skipper (*Euphyes vestris*), Dakota skipper (*Hesperia dacotae*), Canadian tiger swallowtail (*Papilio canadensis*), European cabbage butterfly (*Pieris rapae*), clouded sulphur (*Colias philodice*), alfalfa butterfly (*Colias eurytheme*), Melissa blue (*Lycaeides melissa*), great spangled fritillary (*Speyeria cybele*), Aphrodite fritillary (*Speyeria aphrodite*), callippe fritillary (*Speyeria callippe*), viceroy (*Limenitis archippus*), monarch (*Danaus plexippus*), and common wood nymph (*Cercyonis pegala*). Moth species collected within the project area include *Olethreutes quadrifidus*, *Ancyliis nubeculana* ,

*Choristoneura rosaceana*, *Prioxystus robinae*, *Pyrausta orphisalis*, *Ostrinia nubilalis*, *Sitochroa chortalis*, *Loxostege cerealalis*, and *Nomophila nearctica* (Rider 2007).

## 2.12. THREATENED AND ENDANGERED SPECIES

### 2.12.1. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

In accordance with Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) provided the Corps with a list of the Federally Listed Threatened and Endangered species that may occur in the Lake Sakakawea project area. These Federally Listed species are displayed in table 2.12.1.

A memorandum of agreement (MOU) was signed by the Corps and the North Dakota Game and Fish Department in June 2006. The purpose of this MOU is to develop and coordinate restoration and enhancement activities affecting fish and wildlife resources on the Missouri River System in North Dakota, including the North Dakota portion of Lake Oahe and Lake Sakakawea. Through collaborative efforts it is intended that restorative measures, which enhance fish and wildlife resources, will be identified. The result should benefit threatened and endangered species and other fish and wildlife and promote a positive working relationship between the NDGFD and the Corps.

**Table 2.12.1. Threatened and Endangered Species in the Lake Sakakawea Project Area.**

Common Name	Scientific Name	Classification	Year Listed
Black-Footed Ferret	<i>Mustela nigripes</i>	Endangered	1967
Whooping Crane	<i>Grus americana</i>	Endangered	1967
Gray Wolf	<i>Canis lupus</i>	Endangered	1978
Interior Least Tern	<i>Sterna antillarum</i>	Endangered	1985
Piping Plover	<i>Charadrius melodus</i>	Threatened	1985
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered	1990

### 2.12.2. BLACK-FOOTED FERRET (*MUSTELA NIGRIPES*)

The black-footed ferret is one of the most endangered mammals in North America. The species was listed as endangered in 1967 under a precursor to the Endangered Species Act of 1973 (Volume 32 Federal Register [FR] 4001). Black-footed ferrets once ranged throughout the Great Plains. It has been calculated that if all suitable habitat had been used, as many as 5.6 million black-footed ferrets may have existed in the late 1800's (USFWS 1995). Populations declined dramatically in the 1900's. The rapid decline of black-footed ferrets has been linked to the eradication of prairie dogs over a large portion of their historic range. Prairie dogs now occupy less than 1 percent of their historic range (USFWS 1995). Threats to black-footed ferrets also include canine distemper. Black-footed ferrets are susceptible to predation by golden eagles, great-horned owls, and coyotes. They are also susceptible to road kills and trapping (USFWS 1995).

Breeding takes place from March to May. Young ferrets leave the family group around September. Juvenile males suffer high mortality, a result of their dispersing to new areas

(USFWS 1995). Life expectancies for wild black-footed ferrets are probably less than 5 years. Prairie dogs comprise 90 percent of the diet of black-footed ferrets. A black-footed ferret family of four will consume an average of 763 prairie dogs per year. Black-footed ferrets utilize previously made prairie dog burrows for shelter and raising families (USFWS 1995). Black-footed ferrets are primarily nocturnal and are active in the winter.

The last known wild population of black-footed ferrets was found at Meeteetse, Wyoming in 1981. This population contained 130 individuals in 1984 but subsequently crashed. The remaining eighteen individuals were captured and put into a captive breeding facility in 1987 (USFWS 1995). From 1991 to 2000, 1,185 black-footed ferrets from the captive rearing program were released into the wild, at sites in Wyoming, Montana, South Dakota, Arizona, and on the Utah-Colorado border. Of the re-introduction sites, only the Conata Basin site in South Dakota is considered to have a sizeable self-sustaining ferret population (USFWS 2002).

The counties bordering Lake Sakakawea on the south (McKenzie, Dunn and Mercer) are all within the historic range of the black-footed ferret but have had no known sightings of the ferrets. Garrison Project lands along the Little Missouri Arm in Dunn County contain several prairie dog towns. The prairie dog towns were surveyed for black-footed ferrets in the 1980s, but none were found. The project lands where the prairie dog towns are located are leased for grazing, but the lessees are prohibited from controlling the prairie dogs. Only sport hunting of prairie dogs is permitted in these leases.

### **2.12.3. WHOOPING CRANE (*GRUS AMERICANA*)**

The whooping crane was listed as endangered in 1967 under a precursor to the Endangered Species Act of 1973 (Volume 32 Federal Register [FR] 4001). Shooting and the loss of large expanses of wetlands were the major factors causing the massive decrease in numbers of whooping cranes. The whooping crane migrates through western and central counties of North Dakota during the spring (late April to mid-June) and the fall (late September to mid-October). Whooping cranes use open sand and gravel bars or very shallow water in rivers and lakes for nightly roosting. Cranes seen feeding during the migration are frequently within short flight distances of reservoirs, lakes, and large rivers that offer bare islands for nightly roosting (32 FR 4001). Whooping cranes do not readily tolerate disturbances to themselves or their habitat. A human on foot can quickly cause a crane to fly at distances of over a quarter mile (32 FR 4001).

Major food items for cranes during the migration period include insects, crayfish, frogs, small fish, and other small animals as well as some aquatic vegetation and some cereal crops in adjacent croplands (43 FR 36588).

None of the designated critical habitat for whooping cranes is located at Lake Sakakawea (43 FR 36588). Most whooping crane sightings in North Dakota occur in the western two-thirds of the state, while the cranes are migrating from their winter home in and around Aransas National Wildlife Refuge on the Texas coast to their summer nesting grounds at Wood Buffalo National Park, which straddles the border between Alberta and

the Northwest Territories in Canada. In 1988 a flock of eight whooping cranes was observed in a field in Mercer County just south of the project lands. In 2006, there were nine confirmed whooping crane sightings in North Dakota (Tacha 2006).

#### **2.12.4. GRAY WOLF (*CANIS LUPUS*)**

The gray wolf was historically found throughout North America, with the exception of parts of the southwestern and southeastern United States. The gray wolf was historically present throughout North Dakota, where it was known as the Plains wolf, the buffalo wolf, or the lobo wolf (USFWS 1995).

The gray wolf was listed as endangered in March of 1978 (43 FR 9612). The primary reasons for the decline of the gray wolf are modification of large areas of suitable primitive habitat by commercial interests, encroachment of civilization, and hunting and trapping for bounty (Institute for Ecological Studies 1979).

Gray wolf populations have been extirpated from the lower 48 states except for Minnesota, Wisconsin, Michigan, Montana, Idaho, and Washington. In North Dakota, wolves are very rare. Gray wolves within ND are transients that have left an established pack in Minnesota. These animals, primarily young males, are on the move looking for suitable territory to establish a pack. Given the density of roads in ND and the large expanses of agricultural lands, wolves have not established any confirmed den sites in well over 20 years. Each year a small number of wolf sightings are reported by the public in ND. On average, the NDGFD, USDA's Wildlife Services, and the USFWS confirm one to four sightings per year (Bicknell 2007).

Gray wolves are no longer listed as federally threatened east of U.S. Highway 83 and are currently under state management east of Highway 83 (Federal Register: February 8, 2007 Volume 72, Number 26 , Rules and Regulations, Page 6051-6103). Gray wolves remain listed as federally endangered west of Highway 83.

#### **2.12.5. INTERIOR LEAST TERN (*STERNA ANTILLARUM ATHALASSOS*)**

The least tern is a colonial water bird that favors coastal beaches and river sandbars for nesting and chick rearing. The interior population of the least tern uses several major river systems of the United States including the Rio Grande, Mississippi, Red, Arkansas, Missouri and Ohio Rivers and their tributaries during the breeding season. The stabilization of these river systems for navigation, flood control, hydropower generation, and irrigation has led to a loss of much of the sandbar habitat the species requires and led to the degradation of the remaining habitat. Consequently, in 1985, the interior population of the least tern was listed as endangered by the USFWS (50 FR 21792).

Least terns are migratory and arrive on Lake Sakakawea in late May and early June. After courtship, the terns will mate. Eggs are laid in a nest bowl that is a shallow scrape in the sand, soil, or pebbles. The eggs are laid at a rate of one per day, and a first clutch usually has three eggs. Normally an adult pair will raise one brood of chicks during the nesting season. Re-nesting commonly follows if the nest or young chicks are lost. A re-

nest will usually have only one or two eggs. The eggs will hatch after 18 to 20 days of incubation. Least terns feed primarily on fish, and the chicks are dependent upon their parents for feeding. The chicks will fledge about 20 days after hatching. While they learn to fish for themselves, the chicks continue to be fed by their parents. The adults and juveniles depart the Lake Sakakawea breeding grounds by mid-August to migrate south to wintering grounds in Central America and South America.

Lake Sakakawea has never been a major nesting area for least terns on the Missouri River. In 19 years (1988-2006) of adult least tern censuses conducted on Lake Sakakawea, the average number of adults counted has been 19. This represents 2.9 percent of the Missouri River system average of 655 adults for the same time period. The number of adults counted at Lake Sakakawea has varied from a low of 2 adults in 1997 to a high of 48 adults in 2006. Fledglings on Lake Sakakawea also represent a small proportion of the total number of fledglings from the Missouri River system. Productivity monitoring has been conducted for 15 years (1992-2006) on Lake Sakakawea, with an average of 5.7 fledglings. This represents 2.0 percent of the Missouri River system average of 292 fledglings for the same time period. Least tern fledgling numbers have varied from a low of zero during 1994 through 1997 to a high of 17 in 2006. Productivity for least terns is measured by use of the fledge ratio, the number of fledglings divided by the number of adult pairs. A fledge ratio of 1.00 means one fledgling was produced by one adult pair. The 2003 amendment to the USFWS's 2000 Biological Opinion on the Missouri River (BiOp) set a fledge ratio goal of 0.95 for the Missouri River system. The Lake Sakakawea cumulative fledge ratio for 1992 through 2006 is 0.52. The BiOp fledge ratio goal has been exceeded on Lake Sakakawea only in 1998, when the fledge ratio was 1.04.

Least tern nesting on Lake Sakakawea has been diffuse since surveys began in 1988. However, some of the favored locations include Douglas Creek Bay, Elbowwoods Bay, Deepwater Bay, portions of the Van Hook Arm, Hofflund Bay, and Tobacco Garden Bay.

Procedures for avoiding disturbance to nesting terns by visitors are already implemented at all Corps-owned areas. For development actions on Corps-owned lands with a construction schedule that may overlap interior least tern nesting periods, the plans and specifications would include the procedures to be followed by Corps and construction staff if nesting occurs in or near the construction area.

#### **2.12.6. PIPING PLOVER (*CHARADRIUS MELODUS* - NORTHERN GREAT PLAINS POPULATION)**

The piping plover is a shorebird that favors coastal beaches, alkali wetland, lakeshores, reservoir beaches and river sandbars for nesting and chick rearing. The Northern Great Plains population ranges across three Canadian provinces and eight American states. The 2006 International Piping Plover Adult Census found about 4,700 adult plovers in the northern Great Plains (USGS 2006b). The majority of these adults were found in the alkali wetland areas of Saskatchewan and North Dakota. An important nesting area for plovers in the northern Great Plains is the Missouri River, where 1,311 adult plovers were counted in 2006. Piping plovers are also found in wetland areas of Alberta and Montana

and along Nebraska rivers. Remnant populations of piping plovers are found in Manitoba, Minnesota, Iowa, Kansas and Colorado.

During the twentieth century, piping plover habitat on the northern Great Plains was lost through dam construction, river channelization, river flow modification, and loss of wetlands. The resulting decrease in the number of piping plovers led the USFWS in 1985 to list the Northern Great Plains population as threatened (50 FR 50726).

Piping plovers are migratory and arrive on Lake Sakakawea as early as mid-April and continue arriving through May and into June. Favored habitat on the reservoir includes the shoreline beaches and islands. The typical plover nest is a shallow scrape in the sand that is lined with pebbles. The eggs are laid at a rate of one every other day, and a first clutch for piping plovers usually has four eggs. Normally an adult pair will raise one brood of chicks during the nesting season. Re-nesting commonly follows if a nest or a young brood is lost. A re-nest will usually have only two or three eggs. The eggs will hatch after 27 to 31 days of incubation. Piping plovers feed primarily on insects and aquatic invertebrates, and soon after hatching the chicks begin foraging for themselves. The parents stay with the chicks to provide protection, primarily using a “broken wing” display to distract possible predators. The chicks fledge about 20 to 25 days after hatching. After fledging, juveniles may remain in the nesting area around Lake Sakakawea for a time but begin their migration to the wintering grounds from early July to mid-August. The wintering grounds include the Atlantic Coast from North Carolina through Florida, the Gulf Coast from Florida to Mexico, various Caribbean islands, and the Bahamas.

Depending on the water level, Lake Sakakawea can be a major nesting area for piping plovers in the Missouri River system. A high water level eliminates virtually all of the shoreline beaches and inundates the islands, as was the case in 1997 when a record low of only three adults were counted on the lake. In contrast, drought-induced low water levels expose hundreds of miles of shoreline beaches and islands, providing plentiful habitat as in 2005, when a record 746 adults were counted. During the 19 years (1988-2006) of adult censuses conducted on Lake Sakakawea, the average count was 241 piping plovers. This represents 34.0 percent of the annual Missouri River system average of 708 piping plovers for the same time period. Fledglings on Lake Sakakawea also represent a major proportion of the total number of fledglings in the Missouri River system. Productivity monitoring has been conducted on Lake Sakakawea for 15 years (1992-2006), with an average of 170 fledglings. This represents 41.6 percent of the annual Missouri River system average of 409 fledglings for the same time period. Piping plover fledgling numbers have varied from a low of zero in 1995 to a high of 552 in 2004. Productivity for piping plovers is measured by use of the fledge ratio, the number of fledglings divided by the number of adult pairs. A fledge ratio of 1.00 means one fledgling was produced by one adult pair. The 2003 amendment to the USFWS’s 2000 BiOp set a piping plover fledge ratio goal of 1.22 fledglings per adult pair. The Lake Sakakawea cumulative fledge ratio for 1992 through 2006 is 1.20 fledglings per adult pair. The piping plover fledge ratio on Lake Sakakawea has varied from a low of 0.00 in 1995 to a high of 1.65 in 2002.

Piping plover nesting areas vary widely on Lake Sakakawea. Areas of major nesting area concentrations include Douglas Creek Bay, Arikara Bay, Deepwater Bay, the Van Hook Arm including the Van Hook islands, Hofflund Bay, Little Egypt, Red Mike Bay, Renner Bay, and a counterclockwise arc from the northeast part of Mallard Island through DeTrobriand Bay. Minor plover nesting area concentrations include Elbowwoods Bay, Beacon Island, White Earth Bay, Tobacco Garden Bay, Beacon Point, Antelope Creek, Independence Point, and Beaver Creek Bay.

The USFWS designated critical habitat for the Northern Great Plains population of the piping plover (67 FR 57638), including the Missouri River, in September 2002. Designated areas of critical habitat include prairie alkali wetlands and surrounding shoreline; river channels and associated sandbars and islands; and reservoirs and inland lakes and their sparsely vegetated shorelines, peninsulas, and islands. These areas provide primary courtship, nesting, foraging, sheltering, brood-rearing, and dispersal habitat for piping plovers. For the Garrison Project, all of the islands and shoreline of Lake Audubon were designated as critical habitat. On Lake Sakakawea, all of the islands and shoreline with the exception of the Little Missouri Arm from McKenzie Bay westward were designated as critical habitat.

Procedures for avoiding disturbance to nesting plovers by visitors are already implemented at all Corps-owned areas. For development actions on Corps-owned lands with a construction schedule that may overlap piping plover nesting periods, the plans and specifications would include the procedures to be followed by Corps and construction staff if nesting occurs in or near the construction area.

#### **2.12.7. PALLID STURGEON (*SCAPHIRHYNCHUS ALBUS*)**

The pallid sturgeon, other sturgeon species, and the paddlefish are the only living descendants of an ancient group of Paleozoic fishes. These species are adapted to large, turbid, warm-water rivers. Fishermen occasionally catch pallid sturgeon in the Yellowstone and Missouri rivers in North Dakota (USFWS 1995). The pallid sturgeon was listed as an endangered species in 1990 primarily due to the loss of habitat that occurred when the Missouri River was altered by channelization and by the construction of an extensive system of dams (70 FR 39326). Commercial fishing may have also played a role in the pallid sturgeon's decline (USFWS 1995).

Pallid sturgeon spawning requirements are not well known, but spawning is believed to occur in May or June over gravel or other hard surfaces. Pallid sturgeon feed on aquatic insects, mollusks, and small fishes (USFWS 1995).

Habitat requirements for the pallid sturgeon are still being determined; however, some clues to their habitat can be inferred from areas where most pallid sturgeon (and their close relative, the shovelnose sturgeon) have been captured recently. Pallid sturgeon are most often caught over a sandy substrate. Pallids have been captured most frequently in waters flowing with velocities between 0.33 and 0.98 feet per second in South Dakota



(Erickson 1993, cited in USFWS 1995) and between 1.3 and 2.9 feet per second in Montana (Tews and Clancy 1993).

Within the Missouri River basin, very few wild (naturally occurring) pallid sturgeon exist. Population estimates are only available for existing pallid sturgeon populations in a few reaches of the Missouri River. Approximately 35 adults exist in the Missouri River above Fort Peck Lake. About 180 adults exist between Fort Peck Dam and Lake Sakakawea, including the Yellowstone River up to river mile 71. A remnant population also exists in Lake Sharpe in South Dakota, but a reliable population estimate is not available. Between Fort Randall Dam and Gavins Point Dam, the wild population is essentially zero, although a wild pallid sturgeon was captured in this reach in November 2006 during standard Pallid Sturgeon Population Assessment sampling activities by the USFWS. From Gavins Point Dam to the mouth of the Missouri River, current data is inadequate for a reliable population estimate; however, the majority of pallid sturgeon captures are the result of stocking efforts since 2002. Pallid sturgeon captures are recorded in a permanent database by the USFWS in Bismarck, North Dakota.

#### **2.12.8 SPECIES OF CONCERN**

The North Dakota Natural Heritage Inventory provides a comprehensive system (Heritage System) for identifying and prioritizing ecologically significant natural features in the state. Using methodology developed by The Nature Conservancy and NatureServe, the North Dakota Parks and Recreation Department (NDPRD) maintains the Heritage System, which emphasizes features that are exemplary, unique, or endangered on a statewide or national level (NDNHP 2006). The information obtained for the Heritage System is analyzed to determine field work needs, gaps in our knowledge, and ultimately to determine protection priorities (NDNHP 2006). The information is used to identify animal and plant species of concern, such as the least tern and small yellow ladies'-slipper orchid. A species of concern is not legally protected unless it is also listed on the Federal threatened and endangered species list. Each species of concern receives a state rank and global rank which indicates its status within the state and globally. Table 2.12.2 explains these ranks. Table 2.12.3 lists all species of concern that have been recorded to occur within one of the six counties bordering Lake Sakakawea (Dunn, McLean, McKenzie, Mercer, Mountrail, and Williams).

The North Dakota Game and Fish Department (NDGFD) also maintains information about nongame wildlife in the state. In 2001, Congress approved legislation authorizing Federal dollars for States to use in developing programs to protect nongame wildlife, now called the State Wildlife Grants (SWG) program. In order to receive funds under the program, the NDGFD was required to develop a Comprehensive Wildlife Conservation Strategy, which included a list of 100 species of conservation priority (Hagen et al. 2005). The species on the list are declining in the state of North Dakota or have stable populations in North Dakota but are declining elsewhere. Invertebrates were excluded from the list because of a lack of information on status and distribution of invertebrate species in the state, with the exception of mussels. Plants were excluded because the Comprehensive Wildlife Conservation Strategy applies only to animals. Species were

classified as a Level I, Level II, or Level III species of conservation priority to determine their priority for SWG funding:

Level I species. These species are declining and currently receive little or no monetary support for conservation efforts. These species have a high level of conservation priority because of declining status either in North Dakota or across their range or have a high rate of occurrence in North Dakota, constituting the core of the species' breeding range but are at-risk range wide.

Level II species. The NDGFD will use SWG funding to implement conservation actions to benefit these species if SWG funding for a Level I species is sufficient or conservation needs have been met. Level II species have a moderate level of conservation priority or a high level of conservation priority but a substantial amount of non-SWG funding is available to them.

Level III species. These species have a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

Table 2.12.3 includes species of conservation priority which occur in the six counties bordering Lake Sakakawea. Because the NDNHP and NDGFD compiled their species of concern and species of conservation priority lists separately using different methodologies, some species may be on one list but not the other.

**Table 2.12.2. Natural Heritage Program State and Global Ranks.**

<b>State Rank</b>	<b>Description</b>
S1	Critically Imperiled – Critically imperiled in the state because of extreme rarity or because of some factor of its biology making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or very few remaining individuals (<1,000). [Critically endangered in state.]
S2	Imperiled – Imperiled in the state because of rarity or because of other factors making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000). [Endangered in the state.]
S3	Vulnerable – Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 to 10,000 individuals. [Threatened in the state.]
S4	Apparently Secure – Uncommon but not rare, and usually widespread in the state. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.
S5	Secure – Common, widespread, and abundant in the state. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
SX	Presumed Extirpated – Element is believed to be extirpated from the state. Virtually no likelihood that it will be rediscovered.
SH	Possibly Extirpated (Historical) – Elements occurred historically in the state, and

	there is some expectation that it may be rediscovered. Its presence may not have been verified in the past 20 years.
S?	Unranked – State rank not yet assessed.
SU	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
S#S#	Range Rank – A numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank (e.g., SU should be used rather than S1S4).
<b>Global Rank</b>	<b>Description</b>
G1	Critically Imperiled – Critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction. Typically 5 or fewer occurrences or very few remaining individuals (<1,000) or acres (<2,000) or stream miles (<10). [Critically endangered throughout its range.]
G2	Imperiled - Imperiled globally because of rarity or because of other factors demonstrably making it very vulnerable to extinction or elimination throughout its range. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or acres (2,000 to 10,000) or stream miles (10 to 50). [Endangered throughout its range.]
G3	Vulnerable – Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations) or because of other factors making it vulnerable to extinction or elimination throughout its range. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals. [Threatened throughout its range.]
G4	Apparently Secure – Uncommon but not rare (although it may be quite rare in parts of its range, especially at the periphery), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5	Secure – Common, widespread, and abundant (although it may be quite rare in parts of its range, especially on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
G#G#	Range Rank – A numeric range rank (e.g., G2G3) is used to indicate uncertainty about the exact status of a taxon. Ranges cannot skip more than one rank (e.g., GU should be used rather than G1G4).
G?	Unranked – Global rank not yet assessed.
T	Infraspecific Taxon (trinomial) – The status of infraspecific taxa (subspecies or varieties) are indicated by a “T-rank” following the species’ basic global rank. A T subrank cannot imply the subspecies or variety is more abundant than the species’ basic global rank (i.e., a G1T2 subrank should not occur).

**Table 2.12.3. NDNHP species of concern and NDGFD species of conservation priority that occur in at least one of the six counties bordering Lake Sakakawea.**

Common Name	Scientific Name	State/Global Rank (for NDNHP Species of Concern)	Habitat
<b>MAMMALS</b>			
NDGFD Level I Species of Conservation Priority			
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	SU/G3G4	Short and mixed grasslands, usually well grazed lands
NDGFD Level II Species of Conservation Priority			
River otter	<i>Lutra canadensis</i>	S1/G5	River, streams, wetlands, lakes, ponds
Black-footed ferret	<i>Mustela nigripes</i>	S1/G1	Prairie dog towns
Pygmy shrew	<i>Sorex hoyi</i>	SU/G5	Near wetland areas to forested tracts
Richardson's ground squirrel	<i>Spermophilus richardsonii</i>	N/A	Native mixed grass prairie
Swift fox	<i>Vulpes velox</i>	S1/G3	Short grass, mixed grass, and sandhill prairies
NDGFD Level III Species of Conservation Priority			
Sagebrush vole	<i>Lemmyscus curtatus</i>	S4/G5	Semi-arid areas with loose soil, usually combination of grass and sagebrush
Western small-footed myotis	<i>Myotis ciliolabrum</i>	SU/G5	Rugged terrain, strong association with coniferous trees
Long-eared myotis	<i>Myotis evotis</i>	SU/G5	Wooded areas, principally coniferous or oak forests, near rocky bluffs or cliffs
Long-legged myotis	<i>Myotis volans</i>	SU/G5	Rugged terrain, strong association with coniferous trees
Arctic shrew	<i>Sorex arcticus</i>	N/A	Grass-sedge meadows and wet meadows
<b>BIRDS</b>			
NDGFD Level I Species of Conservation Priority			
Baird's sparrow	<i>Ammodramus bairdii</i>	SU/G4	Upland mixed grass or tallgrass prairie

Common Name	Scientific Name	State/Global Rank (for NDNHP Species of Concern)	Habitat
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>	SU/G5	Freshwater prairie marshes and meadows
Grasshopper sparrow	<i>Ammodramus savannarum</i>	N/A	Idle or lightly grazed tall or mixed grass prairie, shrub prairie meadows, hayfields
Sprague's pipit	<i>Anthus spragueii</i>	S3/G4	Upland mixed grass prairie
American bittern	<i>Botaurus lentiginosus</i>	N/A	Variety of wetlands
Ferruginous hawk	<i>Buteo regalis</i>	SU/G4	Flat and rolling prairie, grasslands, sagebrush country
Swainson's hawk	<i>Buteo swainsoni</i>	SU/G5	Native prairie or cropland that includes thickets of natural tree growth or brush margins of native forested tracts
Lark bunting	<i>Calamospiza melanocorys</i>	N/A	Sagebrush communities or mixed grass prairie
Willet	<i>Catoptrophorus semipalmatus</i>	SU/G5	Semipermanent, seasonal, permanent, and alkali ponds and lakes, intermittent streams
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	N/A	Brushy margins or woodland openings, thickets of small trees or shrubs
Yellow rail	<i>Coturnicops noveboracensis</i>	S2/G4	Sedge meadows and grassy marshes
Marbled godwit	<i>Limosa fedoa</i>	SU/G5	Wetlands, intermittent streams, and various types of ponds and lakes
American white pelican	<i>Pelecanus erythrorhynchos</i>	N/A	Isolated, barren islands or peninsulas in large lakes or reservoirs
Wilson's phalarope	<i>Phalaropus tricolor</i>	N/A	Shallow wetlands and mudflats

Horned grebe	<i>Podiceps auritus</i>	N/A	Ponds and wetlands with beds of emergent vegetation and substantial areas of open water
NDGFD Level II Species of Conservation Priority			
Northern pintail	<i>Anas acuta</i>	S?/G5	Wetland complexes of open water and associated upland prairie
Short-eared owl	<i>Asio flammeus</i>	N/A	Open grasslands, native prairie, wet meadows, or hayfields
Burrowing owl	<i>Athene cunicularia</i>	SU/G4	Dry, open, shortgrass prairie, often associated with burrowing mammals
Golden eagle	<i>Aquila chrysaetos</i>	S3/G5	Badland buttes and adjoining native prairie
Redhead	<i>Aythya americana</i>	N/A	Deep wetlands
Canvasback	<i>Aythya valisineria</i>	N/A	Deep wetlands
Piping plover	<i>Charadrius melodus</i>	S1S2/G3	Barren sand and gravel shores of rivers and lakes, sparsely vegetated shorelines
Northern harrier	<i>Circus cyaneus</i>	N/A	Open grasslands, wet meadows, marshes
Sedge wren	<i>Cistothorus platensis</i>	N/A	Wet meadows of tall grasses and sedges
Bobolink	<i>Dolichonyx oryzivorus</i>	N/A	Tallgrass prairie, hayland, and retired cropland
Prairie falcon	<i>Falco mexicanus</i>	S3/G5	Native prairie and cropland, badlands and high cliffs along stream valleys or scattered buttes on the high plains
Bald eagle	<i>Haliaeetus leucocephalus</i>	S1/G4	Lakes and rivers in forested areas
Loggerhead shrike	<i>Lanius ludovicianus</i>	SU/G5	Open country and dry upland prairie where shrubs and small trees occur

Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	N/A	Mature deciduous trees along river bottoms, shelterbelts, wooded areas of towns
American avocet	<i>Recurvirostra americana</i>	N/A	Ponds or lakes with exposed, sparsely vegetated shorelines
Dickcissel	<i>Spiza americana</i>	N/A	Alfalfa, sweet clover, and other brushy grasslands
Least tern	<i>Sterna antillarum</i>	S1/G4	Sparsely vegetated sandbars of the Missouri and Yellowstone Rivers
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	N/A	Mixed grass prairie interspersed with shrubs
<b>NDGFD Level III Species of Conservation Priority</b>			
Peregrine falcon	<i>Falco peregrinus</i>	S1/G4T3	Cliff ledges, mostly along rivers or lakes
Whooping crane	<i>Grus americana</i>	SX/G1	Extensive marshes with shallow ponds dominated by bulrush, cattails, sedges, and other aquatic plants
Brewer's sparrow	<i>Spizella breweri</i>	S3/G5	Scrub and sage prairie
<b>REPTILES</b>			
<b>NDGFD Level I Species of Conservation Priority</b>			
Western hognose snake	<i>Heterodon nasicus</i>	N/A	Dry grasslands with sandy or gravelly soil
Smooth green snake	<i>Liochlorophis vernalis</i>	N/A	Grassland, upland hills
<b>NDGFD Level II Species of Conservation Priority</b>			
Common snapping turtle	<i>Chelydra serpentina</i>	N/A	Warm water in permanent lakes or rivers
Short-horned lizard	<i>Phrynosoma douglassi</i>	N/A	Semi-arid, shortgrass prairie in rough terrain
<b>NDGFD Level III Species of Conservation Priority</b>			
Sagebrush lizard	<i>Sceloporus graciosus</i>	S4/G5	Badlands, rocky areas near water, adjacent areas of sandy soil and sagebrush

<b>AMPHIBIANS</b>			
NDGFD Level I Species of Conservation Priority			
Canadian toad	<i>Bufo hemiophrys</i>	N/A	Margins of lakes, ponds, and a variety of wetlands
Plains spadefoot	<i>Spea bombifrons</i>	N/A	Dry grasslands with loose or sandy soil
<b>FISH / MUSSELS</b>			
NDGFD Level I Species of Conservation Priority			
Blue sucker	<i>Cycleptus elongatus</i>	S3/G3G4	Deep pools and channels of large rivers
Sturgeon chub	<i>Hybopsis gelida</i>	S2/G3	Large, turbid streams and rivers. Rock on gravel bottom.
Sickelfin chub	<i>Hybopsis meeki</i>	S2/G3	Large, swift flowing rivers with sandy bottom
Pearl dace	<i>Semotilus margarita</i>	S3/G5	Cool, clear ponds, creeks, and lakes
NDGFD Level II Species of Conservation Priority			
Northern redbelly dace	<i>Phoxinus eos</i>	S4/G5	Slow flowing creeks with clear water and vegetation
Flathead chub	<i>Platygobio gracilis</i>	S?/G5	Rivers with turbid waters and swift current
Paddlefish	<i>Polyodon spathula</i>	S?/G4	Large rivers with swift currents
Pallid sturgeon	<i>Scaphirhynchus albus</i>	S1/G1	Large, turbid rivers with strong current and firm sand bottom
NDGFD Level III Species of Conservation Priority			
Finescale dace	<i>Phoxinus neogaeus</i>	SU/G5	Cool bog lakes, streams, some larger lakes, beaver ponds.
Pink papershell mussel	<i>Potamilus ohiensis</i>	SU/G5	Small permanent stream
Flathead catfish	<i>Pylodictis olivaris</i>	N/A	Large rivers in pools with woody debris; impoundments



<b>INSECTS</b>			
Flea beetle species	<i>Altica nancyae</i>	S2/G?	Range grasses
Dakota skipper	<i>Hesperia dacotae</i>	S2/G2	Tall grass and mid-grass prairie with little bluestem, needle and thread grass, and purple coneflower
Tawny crescent	<i>Phyciodes batesii</i>	S3/G4	Moist forest borders in riparian situations and moist valley bottoms that border riparian woodlands
<b>PLANTS</b>			
Wooly milkweed	<i>Asclepias lanuginosa</i>	S1/G4	Sandy or rocky calcareous prairie
Drummond's milkvetch	<i>Astragalus drummondii</i>	S1/G5	Open or wooded hillsides, ravines
Bent-flowered milkvetch	<i>Astragalus vexilliflexus</i>	S3/G4	Barren badland slopes and buttes
Jointed-spike sedge	<i>Carex athrostachya</i>	S3/G5	Low prairie, marsh margins
Dry-spiked sedge	<i>Carex foenea</i>	S1S2/G5	Aspen woods, ravines
Hayden's sedge	<i>Carex haydenii</i>	S1/G5	Wet meadows, sloughs
Spikerush sedge	<i>Carex scirpoidea</i>	S1S2/G5	Rocky slopes, wet meadows
Slender lip fern	<i>Cheilanthes feei</i>	S1/G5	Dry rocky slopes, on sandstone or limestone
Slender-lobed clematis	<i>Clematis Columbiana var tenuiloba</i>	S1/G5?T4?	Rocky slopes, limestone soil
Blue lips	<i>Collinsia parviflora</i>	S2/G5	Mesic slopes of buttes
Small yellow lady's-slipper orchid	<i>Cypripedium parviflorum</i>	S2S3/G5	Damp woods, fens, stream banks
Nine-anthered dalea	<i>Dalea enneandra</i>	S2S3/G5	Sandy or gravelly slopes, dry mixed grass prairie
Cushion fleabane	<i>Erigeron radicans</i>	S1/G3	Dry, exposed hillsides, buttes at higher elevations
Nodding buckwheat	<i>Eriogonum cernuum</i>	S1/G5	Buttes on scoria or limestone
Dakota buckwheat	<i>Eriogonum visheri</i>	S2S3/G3	Clayey badland buttes and slopes, sandy-clay outwash areas

Stickseed	<i>Lappula cenchrusoides</i>	S1/G4	Dry soils in the open
Twinflower	<i>Linnaea borealis</i>	S4/G5	Moist, wooded (north-facing) slopes
Indianpipe	<i>Monotropa uniflora</i>	S3/G5	Rich shady woods
Sedge mousetail	<i>Myosurus aristatus</i>	S1/G5	Moist areas, vernal wetlands of mixed grass praires
Smooth cliffbrake	<i>Pellaea glabella</i>	S4/G5	Sandstone caprock of buttes and ledges
Alyssum-leaved phlox	<i>Phlox alyssifolia</i>	S1S2/G5	Sandy, gravelly, or clayey slopes and ridges, buttes
American primrose	<i>Primula incana</i>	S1S2/G4G5	Alkali wet meadows, fens
Heart-leaved buttercup	<i>Ranunculus cardiophyllus</i>	S1/G4G5	Wet meadows, seeps
Hayden's yellowcress	<i>Rorippa calycina</i>	SH/G3	Riverbanks, shores
Greenthread	<i>Thelesperma subnudum</i> var. <i>marginatum</i>	S2S3/G5T5	Sandy prairie, open plains
Bog violet	<i>Viola conspersa</i>	S2S3/G5	Moist woods, stream banks

### 2.13. TERRESTRIAL INVASIVE SPECIES/AQUATIC NUISANCE SPECIES

Executive Order 13112 of February 3, 1999 - Invasive Species states:

- (a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, invasive species shall, to the extent practicable and permitted by law,
- (1) identify such actions;
  - (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and
  - (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm

caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

(b) Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

A number of Federal agencies are charged with preventing and controlling the introduction of aquatic nuisance species under the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended 16 U.S.C. 4701 et seq. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), the U.S. Department of Agriculture (USDA), the Department of Defense, the Department of Transportation (DOT), and the State Department are all represented on the Aquatic Nuisance Species Task Force, which coordinates Federal activities to implement the Act.

The Corps has maintained an Aquatic Plant Control Research Program for many years and more recently started an Aquatic Nuisance Species Research Program at its Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi (Cole 2003). ERDC conducts interdisciplinary research on the prevention, control, and management of ANS that impact Corps projects and public facilities. The development of technologies for detecting unintentionally introduced aquatic invaders and managing established nuisance species can provide major advances in the management of them. Aquatic nuisance species are of concern in Corps of Engineers missions relating to maintenance of all Corps projects. To promote prevention control, monitoring and management of ANS at the Garrison Project, the Corps may participate as an advisory committee member for ANS.

#### **2.13.1. INVASIVE PLANTS**

The terms "noxious weed" or "invasive plant" are often used to describe the same plant; however, these terms are not interchangeable in this document. A weed is an undesirable plant that grows or spreads aggressively. An invasive plant is one that grows and spreads rapidly resulting in the replacement of desirable native plants. Executive Order 13112, Invasive Species, defines an invasive weed as an alien species. The term "noxious" has legal implications for States that have noxious weed laws or regulations and will therefore be discussed in further detail below.

Native plants evolved over thousands of years to fill unique ecological niches. Species native to North America are generally recognized as those occurring on the continent prior to European settlement (Swearingen 2004). Weedy plants evolved in and are native to other countries. Like North American native plants, non-native plants are kept in check by insects or diseases, by competition with other species, and by other elements of their natural environment.

Early European settlers in North America inadvertently brought weed seeds with them in the hay brought for their animals or in the dirt used as ballast for their ships, or even in clothes or bedding (BLM 2006). Some activities, such as clearing the land, opened up niches that created places for weeds to grow. Settlers also purposely brought plants from their home country to reseed areas, make dye for clothing, and use as ornamental plants.

Without natural enemies, some non-native plants became invasive, reducing the diversity and quantity of native plants. Weeds are continuing to spread rapidly in many areas across the country. Weeds spread to an estimated 4,000 acres (over 6 square miles) each day on public lands in the United States (BLM 2006).

### **2.13.2. NOXIOUS WEEDS**

The Federal Noxious Weeds Act of 1974, (PL 93-629, 7 U.S.C. §§ 2801-2814, January 3, 1975, as amended 1988 and 1994), provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture, commerce, wildlife resources, or the public health.

The Act requires that each federal agency develop a management program to control undesirable plants on federal lands under the agency's jurisdiction; establish and adequately fund the program; implement cooperative agreements with state agencies to coordinate management of undesirable plants on federal lands; and establish integrated management systems to control undesirable plants targeted under cooperative agreements. A federal agency is not required to carry out management programs on federal lands unless similar programs are being implemented on state or private lands in the same area.

The Act defines noxious weeds as any living stage (including seeds and reproductive parts) of a parasitic or other plant of a kind which is of foreign origin, is new to or not widely prevalent in the U.S., and can directly or indirectly injure crops, other useful plants, livestock, poultry or other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or the public health. Undesirable plants include species classified as undesirable, noxious, harmful, exotic, injurious, or poisonous under State or federal law, but do not include species listed as endangered under the Endangered Species Act. The Federal Interagency Committee on the Management of Noxious and Exotic Weeds coordinates weed management efforts on federal lands.

North Dakota state-listed noxious/exotic weeds include salt cedar (*Tamarix* spp.), purple loosestrife (*Lythrum salicaria*), leafy spurge (*Euphorbia esula*), field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), Russian knapweed (*Acroptilon repens*), absinth wormwood (*Artemisia absinthium*), spotted and diffuse knapweed (*Centaurea stoebe* ssp. *micranthos*), yellow starthistle (*Centaurea solstitialis*), and dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*).

According to the North Dakota's Noxious Weeds 2005 Survey Report, North Dakota had 993,644 acres infested with leafy spurge in 2005, compared to 1,140,713 in 2004. Canada thistle infestation dropped from 1,085,224 acres in 2004 to 956,335 in 2005.

Absinth wormwood, with 452,594 acres reported, was North Dakota's third most extensive noxious weed in 2005 (NDDA 2006a).

In 2002, the Lake Sakakawea Interagency Weed Task Force (Task Force) was created consisting of federal, tribal, state, county, and local agencies and some private contractors. The purposes of the Task Force are to increase surveying for noxious weeds on Corps-administered land, promote educational products and tours, and help develop mapping requirements and standards for noxious weed control (NDDA 2006b). The Task Force meets monthly, shares available resources, exchanges methods and ideas, and coordinates with interested parties involved with weed control on project lands. Noxious weed species which are currently monitored and controlled on lands around Lake Sakakawea include salt cedar, leafy spurge, Canada thistle and absinth wormwood. Plans to include additional new invasive plants including houndstongue, yellow toadflax, and black henbane, are also being developed. To date, purple loosestrife has not been found on any Corps managed lands, but it has been identified in ornamental gardens on adjacent private property. The North Dakota Department of Agriculture has implemented a program, which includes an exchange program with homeowners, to replace any purple loosestrife utilized as ornamentals.

The main objectives of the Task Force are to: complete mapping of known and new infestations; utilize contracts with local experts including County Weed Officers, Tribal and State agencies, and private contractors to apply control methods (chemical, biological or mechanical); research new control methods; prevent new invasive plants from spreading; and provide educational materials to the public concerning noxious weed control. Currently, contracts with five of the six counties around the lake and with three private contractors for surveys and control of noxious weeds have been established. The Task Force's priority is an ongoing team effort to prevent the spread of salt cedar.

The following species below are either present in the Lake Sakakawea region or have a high potential for invasion. Active management of these species has been implemented.

#### **2.13.2.1. Salt Cedar (*Tamarix* spp.)**

Salt cedar is a persistent pioneer that is able to survive in a wide variety of habitats. An enormous water consumer, a single large plant can absorb 200 gallons of water a day (Hoddenbach 1987), although evapotranspiration rates vary based on water availability, stand density, and weather conditions (Davenport et al. 1982). Salt cedar's high water consumption further stresses native vegetation by lowering ground water levels and can dry up springs and marshy areas. Paradoxically, salt cedar infestations may also lead to flooding, as its extensive root system can choke streambeds (Rush 1994). It frequently forms monotypic stands that replace willows, cottonwoods, and other native riparian vegetation.

The stems and leaves of mature plants secrete salt, forming a crust above and below ground, which inhibits the growth of other plants (Sudbrock 1993). Salt cedar also degrades shoreline aesthetics and damages or destroys wildlife habitat, including nesting habitat critical to the success of the threatened piping plover and the endangered least

tern. There is also potential for salt cedar to spread into the prairie pothole region of central and eastern North Dakota, and once there, quickly harm habitat vital to waterfowl production (Brookman and Rundquist 2003).

Infestations also have detrimental impacts on wildlife. Salt cedar seeds have almost no protein and are too small to be eaten by most animals. In addition, its scale-like leaves offer little suitable forage for browsing animals (Hoddenbach 1987). Studies indicate that salt cedar is not favored bird habitat. In their study of habitat use by birds along the lower Colorado River, Anderson and Ohmart (1977) found that salt cedar stands supported only four species per hundred acres, as opposed to 154 species per hundred acres of native vegetation.

Salt cedar was first detected in the state of North Dakota in the summer of 2001 (Brookman and Rundquist 2003). Since that time, it has been legally classified as a noxious weed and has become a top priority for eradication among state natural resource managers. Salt cedar spread from Montana along the Missouri River corridor in western North Dakota into Lake Sakakawea.

#### **2.13.2.2. Leafy Spurge (*Euphorbia esula*)**

Leafy spurge is a deep-rooted, long-lived perennial native to Eurasia. It may have been introduced to North America in the 19th century as an ornamental plant or as a contaminant plant in imported grain or ballast water. Leafy spurge is widespread throughout the United States and southern Canada. Since its introduction, leafy spurge has become a serious management problem, particularly for the north and central plains states.

Leafy spurge stems are hairless, pale- to blue-green and can reach 32 inches tall. Spurge leaves are linear to oblong and alternate on the stem. When the plant is injured, a milky latex sap flows from the injury. The small flowers are green and inconspicuous, surrounded by a pair of yellow-green heart shaped leaves (bracts) that are often mistaken for flowers. Leafy spurge grows in a variety of dry and moist habitats ranging from flood plains and riverbanks to grasslands, ridges and mountain slopes. It frequently infests rough terrain, hindering access for management by conventional means. Leafy spurge can dominate bottomlands and is commonly found in abandoned cropland, pastures, rangeland, roadsides and waste areas. It is found less frequently on top slopes, summits, and shoulder slopes. This weed is aggressive, especially in disturbed or dry situations where plant competition is less intense.

The direct impact of leafy spurge is the reduction or entire local displacement of native plant communities. This dramatically alters ecosystems by affecting the properties of soils and the composition and function of plant and animal communities. These ecologic changes directly affect local and regional economies through reduced recreational and agricultural revenue. The cost of management is very high.

Due to its extensive root system, herbicide management of established stands is costly and requires repeated periodic application. For large infestations, herbicidal management

costs may exceed the value of the land (Lym 1997). Another method of control that has proven effective is sheep and goat grazing. However, the use of sheep to control leafy spurge in North Dakota has yet to become extremely widespread. Angora goats were starting to be used for leafy spurge control in the 1990s until the government incentive program for mohair production was curtailed. Because there was no market for the meat in the state and the hair prices were low, it became uneconomical to keep Angora goats just to control leafy spurge (Lym 1997).

Leafy spurge is a serious problem in cropland, where herbicide rates required for effective control are higher than labels permit. As of 1999, over 2.7 million acres were infested, mainly in the Northern Great Plains and the prairie provinces of Canada (Goodwin et al. 2001). Economic losses in North Dakota alone exceed \$14.4 million per year due to reduced cattle forage production and control costs. In North Dakota leafy spurge is designated a “noxious weed,” meaning landowners or managers are legally responsible for its control (Goodwin et al. 2001).

Biological control of leafy spurge was initiated in the mid 1980s. To date, 10 species of insects have been released in North Dakota for control of leafy spurge, and six have become established. Four of the six established insects are flea beetles (*Aphthona* spp.), which have reduced the leafy spurge density more than any other agent.

Research at North Dakota State University found flea beetle establishment was best on silt loam, silt clay loam, clay loam, and clay soils with an organic matter content of 6 to 9.5 percent. Flea beetles were least productive in fine sand to loamy fine sand soils with an organic matter content of 1 to 3 percent. In addition, the release area needs to be well drained and not subject to frequent prolonged flooding or standing water, which will kill the larvae (NDSU 1999).

Initial releases have been most successful on south-facing slopes, although good success has been achieved on western and eastern slopes as well. On north-facing slopes flea beetles require a longer period to reach high enough numbers to control leafy spurge. Flea beetles establish best in moderate densities of leafy spurge (60 to 90 stems per square yard) with minimal grass cover and thatch. Establishment in dense leafy spurge stands is often difficult. Flea beetles should be released on the margins of dense infestations, allowing the insect to work into denser stands as the population builds (NDSU 1999).

Research data is lacking and/or has given inconsistent results concerning the best species to release in a specific area. What is known at the time this Master Plan/EA was prepared is that *Aphthona lacertosa* is more widely adapted to the North Dakota climate and will tolerate a wider range of temperature and moisture conditions than other *Aphthona* species. *A. nigriscutis* generally has done better on higher, drier sites with low to moderate stands of leafy spurge. Releasing a mixture of both species in the same location is the best way to determine which *Aphthona* species is best suited for a particular area (NDSU 1999).

### **2.13.2.3. Canada Thistle (*Cirsium arvense*)**

This thistle originates in the temperate regions of Eurasia and was introduced to the United States in the early 1600s (NPS 2006a). By 1954, it had been declared a noxious weed in forty-three states. In Canada and the U.S., it is considered one of the most tenacious and economically important agricultural weeds, but only in recent years has it been recognized as a problem in natural areas.

Canada thistle is an herbaceous perennial with erect stems 1½-4 feet tall, prickly leaves, and an extensive creeping rootstock. Stems are branched, often slightly hairy, and ridged. Leaves are lance-shaped and irregularly lobed with spiny, toothed margins; they are borne singly and alternately along the stem. Rose-purple, lavender, or (sometimes) white flower heads appear from June through October and occur in rounded, umbrella-shaped clusters.

Canada thistle produces an abundance of bristly-plumed seeds, which are easily dispersed by the wind. Most of the seeds germinate within a year, but some may remain viable in the soil for up to 20 years or more. Vegetative reproduction in Canada thistle is aided by a fibrous taproot capable of sending out lateral roots as deep as 3 feet below ground, and from which shoots sprout up at frequent intervals. It also readily regenerates from root fragments less than an inch in length. The small, dry, single-seeded fruits of Canada thistle, called achenes, are 1-1½ inches long and have a feathery structure attached to the seed base. Many native species of thistle occur in the U.S., some of which are rare. Because of the possibility of confusion with native species, Canada thistle should be accurately identified before any control is attempted (NPS 2006a).

Canada thistle grows in a variety of habitats, including barrens, glades, meadows, prairies, fields, pastures, and waste places. It does best in disturbed upland areas but also invades wet areas with fluctuating water levels such as stream bank sedge meadows and wet prairies (NPS 2006a). Natural communities that are threatened by Canada thistle include non-forested plant communities such as prairies, barrens, savannas, glades, sand dunes, fields and meadows that have been impacted by disturbance. As it establishes itself in an area, Canada thistle crowds out and replaces native plants, changes the structure and species composition of natural plant communities, and reduces plant and animal diversity (NPS 2006a). This highly invasive thistle prevents the coexistence of other plant species through shading, competition for soil resources, and possibly through the release of chemical toxins poisonous to other plants.

Canada thistle is declared a "noxious weed" throughout the U.S. and has long been recognized as a major agricultural pest, costing tens of millions of dollars in direct crop losses annually and additional millions of dollars for control costs. Only recently have the harmful impacts of Canada thistle to native species and natural ecosystems received notable attention. Management of Canada thistle can be achieved through hand-cutting, mowing, controlled burning, and chemical means, depending on the level of infestation and the type of area being managed. Due to its perennial nature, entire plants must be killed in order to prevent regrowth from rootstock (NPS 2006a). Hand cutting of individual plants or mowing of larger infestations should be conducted prior to seed set



and must be repeated until the starch reserves in the roots are exhausted. Because early season burning of Canada thistle can stimulate its growth and flowering, controlled burns should be carried out late in the growing season to be most effective.

In natural areas where Canada thistle is interspersed with desirable native plants, targeted application of a systemic herbicide that carries plant toxins to the roots may be effective (NPS 2006a). Several biological control agents will suppress Canada thistle to a limited extent. Four species of insects (including weevils) and one fungus species are currently being tested for release in Montana, Idaho, North Dakota, and Washington (USGS 2000).

#### **2.13.2.4. Absinth Wormwood (*Artemisia absinthium*)**

Absinth wormwood is a perennial forb which is easily recognized by its strong sage odor (Lym et al. 1995). The plant also is known as American or common wormwood, mugwort or madderwort, and wormwood sage. It is grown in herb gardens for the sage flavor of the leaves. The young flower heads are the source of aromatic oil used in preparation of vermouth and absinth. The oil of absinth wormwood is also an active ingredient in antiseptic liniments. Absinth wormwood is an escaped ornamental introduced from Europe and has spread rapidly in the pasture and rangeland of North Dakota, especially in dry years (Lym et al. 1995). The plant causes economic losses by reducing available forage, tainting the milk of cattle that graze it, and medically as a pollen source for allergies and asthma. Absinth wormwood is a prolific seed producer but also can spread by short roots. The plant is most often found on dry soils, in overgrazed pasture and rangeland, wastelands, and roadsides.

Absinth wormwood is a perennial fragrant forb or herb. It commonly is 3 feet tall at maturity but can grow over 5 feet tall (Lym et al. 1995). The plant is woody at the base and regrows from the soil level each spring. Leaves are light to olive green in color, 2 to 5 inches long, and divided two or three times into deeply lobed leaflets. Leaves and stems are covered with fine silky hairs that give the plant a grayish appearance. Absinth wormwood is a member of the composite family. Flower stalks appear at each upper leaf node and produce numerous flower heads 1/8 inch in diameter, which appear from late July through mid August in North Dakota. Many small, inconspicuous yellow flowers are produced in each head. Each fruit contains one seed, which is less than 1/16 inch long, smooth, flattened, and light gray-brown in color. These small seeds are scattered easily by wind, water, animals, and in hay.

Control of absinth wormwood is much easier and more economical than for most perennial weeds (Lym et al. 1995). Herbicides are commonly used to control absinth wormwood and should be applied when the plant is at least 12 inches tall and actively growing. Herbicides applied from late June until mid August have given better residual control the following growing season than either spring or fall treatments. The plants should be mowed in early to mid summer to promote active regrowth prior to a fall treatment.

#### **2.13.2.5. Purple Loosestrife (*Lythrum salicaria*)**

Purple loosestrife is an erect, herbaceous perennial of Eurasian origin that became established in the estuaries of northeastern North America by the early 1800's (Thompson et al. 1987). By the late 1800s, it had spread throughout the northeastern United States and southeastern Canada, reaching as far north and west as Manitoba. Purple loosestrife was sold in North Dakota by its genus name *Lythrum* for at least 50 years. *Lythrum* plants were brought to North Dakota for flower gardens because of their striking color, ease of growth, winter hardiness, and lack of insect or disease problems. The garden varieties of purple loosestrife were sold by many cultivar names including Morden Pink, Dropmore Purple, and Morden Gleam. These garden cultivars were thought to be sterile but have now been shown to cross-pollinate with the wild *Lythrum*-type and sometimes with other *Lythrum* cultivars.

*L. salicaria* caused few problems until the 1930s when it became aggressive in the floodplain pastures of the St. Lawrence River (USGS 1999). Since then, it has steadily expanded its local distribution and now poses a serious threat to native emergent vegetation in shallow water marshes throughout the northeastern and north central regions. Recent records indicate that purple loosestrife is also tolerant of soils and climates beyond these regions and threatens to become a serious problem in wetlands and irrigation systems in the Great Plains.

Purple loosestrife was added to the North Dakota Noxious Weed List in 1996. State law requires all purple loosestrife plants to be removed to prevent this plant from becoming a major weed problem in the wetlands of the state. The plant is extremely difficult to eradicate although recently a suite of biological control agents, i.e., beetles and weevils, have proven effective in suppressing the plant. Estimated losses are \$45 million per year in control costs and forage loss (ATTRA 1997).

#### **2.13.3. AQUATIC NUISANCE SPECIES (ANS)**

Human activities over the past century have influenced the vegetative regime of areas by introducing noxious weeds and aquatic nuisance species (ANS). Once in the area, these plants and animals began spreading and out-competed the native species. The impact of these new species is the replacement of native plants and animals that were more beneficial to humans or that were desirable introduced species, such as stocked non-native sport fish. The new species can impact the lower trophic levels by redirecting and reallocating energy flows toward the upper levels, resulting in reduced carrying capacities for native or desirable species. A secondary concern is that these new species can modify habitats or plug up water intakes or waterways (Schlueter 2006).

The North Dakota Game and Fish Department (NDGFD) has written a statewide management plan to deal with ANS, and there is a state law on ANS (NDGFD 2003). The NDGFD has an on-going effort to educate the public, private, and other state or federal agencies on procedures for preventing the spread of ANS. There has been a combined effort by the Corps and NDGFD to monitor Lake Sakakawea for ANS regarding the presence or absence of selected species of concern and any spread from known infestations of ANS. Signage to educate the public about ANS and facilities for

hosing down boats and trailers to prevent the spread of ANS are included as development needs for all three of the State Parks on Lake Sakakawea public lands in Chapter 7.

While major coordinated efforts are being made by Federal, state, and local governments to eradicate the worst of these plants, chemical and mechanical control is expensive and often unsuccessful and also results in the elimination of native plants. In addition, these eradication efforts often lead to an opening of the area and subsequent re-colonization. Controls can also be applied to fauna, but they would likely result in only limited success, as is the case for plants.

It is difficult to identify the effects that species could have once introduced to an area. Currently, there are various ANS species that are impacting native species and habitats and economic and recreational activity in North Dakota. These impacts are known to be negative and are of significant concern.

The following data identifies existing and potential ANS threats within the Lake Sakakawea region and is based primarily on the Risk Assessment for the Introduction and Establishment of Aquatic Nuisance Species in North Dakota prepared by Larry Brooks of Minot State University and Lynn R. Schlueter of the NDGFD in January 2004 and by Schlueter (2006). The list of potential threats to Lake Sakakawea has been revised in coordination with these authors to reflect the information available in 2006.

#### **2.13.3.1. Present and Established ANS**

These species are present and established in North Dakota and have the potential to spread in North Dakota. There are limited or no known management strategies for control of these species. These species can be managed through actions that involve mitigation of impacts, control of population size, and prevention of dispersal to other water bodies. Examples of species addressed as ANS are discussed below.

##### **2.13.3.1.1. Curlyleaf Pondweed (*Potamogeton crispus*)**

Curlyleaf pondweed is a perennial, evergreen, rooted, submerged aquatic vascular plant native to Eurasia, Africa, and Australia. By late spring, curlyleaf pondweed has resumed growing, as this plant sprouts in the late fall and overwinters as a growing plant (Schlueter 2006), and may form dense mats, which interfere with recreation and limit the growth of native aquatic plants. By July, this plant senesces and forms vegetative propagules called turions. The turions are dispersed by water movement throughout a water body. Turions may also be transferred to unfested lakes by fishermen, on boat trailers, or by water fowl. In some areas curlyleaf pondweed may not be considered a problem; in shallow lakes, however, it can grow dense enough to affect recreational boating and fishing. It can alter the availability of nutrients in some lakes enough to cause summer algal blooms. This plant is common in Lake Audubon, Lake Sakakawea, and Missouri River.

By 1950 most of the U.S. was infested by this species. Curlyleaf pondweed is well established in Lake Sakakawea and in the Missouri River below Garrison Dam. Curlyleaf pondweed has been identified in other areas of North Dakota as well:

McDowell Dam near Bismarck, ND; and in the Sheyenne River between Lake Ashtabula and Valley City, ND. Containment operations are currently being implemented by the NDGFD (Schlueter 2006).

#### **2.13.3.1.2. Eurasian Watermilfoil (*Myriophyllum spicatum*)**

Eurasian watermilfoil was accidentally introduced to North America from Europe. Spread westward into inland lakes primarily by boats and water birds, it reached the Midwestern states between the 1950s and 1980s. A key factor in the plant's success is its ability to reproduce through stem fragmentation and runners. A single segment of stem and leaves can take root and form a new colony (Schlueter 2006). Fragments clinging to boats and trailers can spread the plant from lake to lake. Once the plant is established, it is almost impossible to eradicate it. Populations of this plant exist in Minnesota and Wisconsin, the home states of many non-residents who come to North Dakota for outdoor recreation. Eurasian watermilfoil spread to the Dead Colt Creek Reservoir near Lisbon, ND, and in the Sheyenne River in Valley City, ND (Schlueter 2006; Seifert-Spilde 2007). Both populations are being monitored, and control efforts have included dewatering of the reservoir. In addition, chemical treatment of the Sheyenne River infestation is planned for the spring of 2007 (Schlueter 2006).

#### **2.13.3.2. Potential ANS**

The following species are currently not known to be present in North Dakota, but have a high potential to invade. There are limited or no known management strategies for these species. Appropriate management of these species includes prevention of introductions and eradication of pioneering populations.

##### **2.13.3.2.1. Exotic Mussels (*Dreissena Species*)**

The only two dreissenid mussels known to have been introduced into the U.S. are the notorious zebra mussel (*D. polymorpha*) and the more inconspicuous quagga mussel (*D. bugensis*). Overall, quaggas are rounder in shape and zebras are more triangular. The quagga mussel also has a small byssal groove on the ventral side near the hinge and the zebra mussel has a larger groove in the middle of the ventral side. Color patterns vary widely with black, cream, or white bands; a distinct form of quagga has been found that is pale or completely white in Lake Erie (Marsden et al. 1996).

Both the quagga mussel and zebra mussel are prolific breeders. Both species are dioecious (sexually distinct) with external fertilization. A fully mature female mussel is capable of producing up to one million eggs per season. After fertilization, pelagic microscopic larvae, or veligers, develop within a few days and these veligers soon acquire minute bivalve shells. Free-swimming veligers drift with the currents for 3 to 4 weeks, feeding by their hair-like cilia, while trying to locate suitable substrates on which to settle and secure byssal threads. Mortality in this transitional stage from planktonic veliger to settled juveniles may exceed 99 percent (Bially and MacIsaac 2000). Zebra and quagga mussels appear to have different spatial distributions; zebras are primarily warm, eutrophic, shallow water inhabitants, and quaggas inhabit shallow, warm water to deep, oligotrophic, cold water (MacIsaac 1994). Recent information has shown that

Quagga mussel can and will inhabit shallow waters when zebra mussels are not present (Schlueter 2006).

Chemical control methods of *Dreissena* are routinely done, and the molluscicides on the market would be injurious to other aquatic species as well. Prechlorination has been the most common control treatment, but if this method is used to control both zebras and quaggas, the amount of chlorine required may reach hazardous levels (Richerson and Maynard 2006). Another alternative has been potassium permanganate, especially for drinking water sources, although this method is also environmentally damaging. Other methods of control include oxygen deprivation, thermal (heat) treatment, exposure and desiccation, radiation, manual scraping, high-pressure jetting, mechanical filtration, removable substrates, molluscicides, ozone, antifouling coatings, electric currents, and sonic vibration. Millions of dollars are spent to control these mussels. Biological control so far has proven to be ineffective in controlling *Dreissena* species. Predation by migrating diving ducks, fish species, and crayfish may reduce mussel abundance, although the effects are short-lived (Bially and MacIsaac 2000). Other biological controls being researched are selectively toxic microbes and parasites that may play a role in management of *Dreissena* populations (Molloy 1998). Other prospective approaches to controlling *Dreissena* populations may be to disrupt the reproductive process by interfering with the synchronization of the timing of gamete release by males and females during spawning (Snyder et al. 1997). Another approach would be to inhibit the planktonic veliger from settling, since this is the most vulnerable stage in the life cycle (Kennedy 2002).

#### **2.13.3.2.2. Zebra Mussel (*Dreissena polymorpha*)**

In the late 1980's, the zebra mussel was discovered in Lake St. Clair, between Lake Huron and Lake Erie. Zebra mussels were introduced from Eastern Europe via ballast water discharge from European freighters. This species spread rapidly to 20 states in the Mississippi River drainage. Nationwide expenditures to control zebra mussels in water intake pipes, water filtration equipment, and electric generating plants are estimated at \$3.1 billion over 10 years (OTA 1993).

Zebra mussels can easily survive overland transport from the Midwest to North Dakota while attached to boat hulls or in live wells, engine cooling systems, or bait buckets. Live zebra mussels have been found in Minnesota lakes that are less than 100 miles from North Dakota's border. There may be a zebra mussel infestation in Fort Peck Reservoir. If this population does exist, it could have the potential to infest the entire Missouri River system. The Montana Department of Fish, Wildlife and Parks continues to sample Fort Peck and the upper Missouri River to determine the presence of zebra mussels (Schlueter 2006). Juvenile zebra mussels have been found in the Missouri River below Gavins Point Dam and Big Bend Dam in South Dakota. These two areas are within a short drive from North Dakota's primary fisheries (i.e., Devils Lake, Lake Sakakawea, and the Missouri River).

The zebra mussel is a prolific fouling organism with great potential to disrupt municipal water intake structures and cause ecological and economic damage in upper Midwest.

Zebra mussel die-off can occur and large numbers of individuals are left rotting on the shoreline, which is a human health concern. The largest concern is that zebra mussels filter the water column and remove food items used by zooplankton and small fishes. Reductions in food resources for zooplankton and larval fish would move up the food chain and result in the loss of native fishes and/or desirable sport fish. In addition, the shells of the zebra mussel can be jagged and be dangerous to walk on with bare feet when wading, swimming, or using the beach (Schlueter 2006).

#### **2.13.3.2.3. Quagga Mussel (*Dreissena bugensis*)**

Quagga mussels are indigenous to the Dneiper River drainage of Ukraine. It was discovered in the Bug River in 1890 by Andrusov, who named the species in 1897 (Mills et al. 1996). Canals built in Europe have allowed range expansion of this species, and it now occurs in almost all Dneiper reservoirs in the eastern and southern regions of Ukraine and deltas of the Dnieper River tributaries (Mills et al. 1996). The quagga mussel is currently distributed in Lake Michigan, Lake Huron, Lake Erie, Lake Ontario, Lake St. Clair, Saginaw Bay, throughout the St. Lawrence River north to Quebec City; there are also a few inland occurrences in New York, Ohio, Michigan, and Pennsylvania.

The absence of quagga mussels from areas where zebra mussels are present may be related to the timing and location of introduction rather than physiological tolerances (MacIsaac 1994). The quagga must have arrived more recently than the zebra based on differences in size classes, and therefore it seems plausible that the quagga is still in the process of expanding its nonindigenous range (May and Marsden 1992; MacIsaac 1994).

Quagga mussels are able to colonize hard and soft substrates (Mills et al. 1996). The ability to colonize different substrates could suggest that quagga mussels are not limited to deeper water habitats and that it may inhabit a wider range of water depths. In the Great Lakes, there are reports that the quagga mussel is colonizing at shallower depths, supporting the idea that the quagga can occupy a wider range of depths (Mills et al. 1996).

Quagga mussels have been found at depths up to 130 meters (984 feet) in the Great Lakes, but this mussel is only known to exist in its native range from depths of 0 to 28 m (0 to 92 feet). Observations and research suggest that the North American quagga mussel is a cold deep-water form, contrasting with Ukraine populations where quagga mussels thrive at higher temperatures. This mussel has the potential of outpacing the highly invasive zebra mussel (whose population exploded after 1988) and causing even more damage.

#### **2.13.3.2.4. Common Carp (*Cyprinus carpio*)**

Common carp were introduced into Europe from the Caspian Sea region during the era of the Roman Empire and raised as a food fish. Carp were introduced into the United States in the late 1800s to meet the desires of European immigrants for a food fish. The United States Government propagated and stocked carp in many states during this time period. This fish species proved to be adaptable and thrived in its new environment, which

allowed it to quickly expand its range. By the early 1900s carp were found in all of the states and in a variety of water bodies (Brooks and Schlueter 2004).

Carp are omnivorous, feeding on both plant materials and animal food items. An overabundance of carp can have a negative impact on sensitive ecosystems as their feeding activities (e.g. dislodging plants, breaking plants into fragments, and increasing turbidity by stirring up the bottom and its sediments (NPS 2006b) and by consuming large amounts of macroinvertebrates such as leeches, small crayfish, insect larval forms, and organic materials (Schlueter 2006). They are also highly tolerant of pollution and spread quickly through waters in which most native species cannot flourish. Moreover, carp proliferate well in existing, highly impacted aquatic areas. Management of the Missouri River system results in fluctuating reservoir levels, water temperature, and water quality. These fluctuations greatly affect the types of fish that can survive in the reservoir, typically shifting the mix of species from specialists towards generalists.

Anglers cannot import this fish species into North Dakota to use as a baitfish. Control methods for carp include eradicating that ANS infestation at a tremendous cost to the NDGFD, success is unlikely due to re-infestation from outside and upstream sources (Brooks and Schlueter 2004). Pesticides would eliminate both target and native/desirable fish species. In addition, when a lake is eradicated, the recreational fishery is eliminated for approximately 3 to 5 years while stocked fish grow to a harvestable size. In many cases, carp are soon found in that water body after the eradication due an incomplete fish kill or the reintroduction of carp. In the case of Lake Sakakawea, eradication efforts would have to include the entire upstream drainage to the Missouri River's headwaters, making eradication impractical.

#### **2.13.3.2.5. Asian Clam (*Corbicula fluminea*)**

Asian clams are freshwater clams native to southern and eastern Asia. The sources and pathway of initial introductions are not well documented. This ANS was found in the U.S. beginning in the late 1970s. Asian clams could cause the same problems as zebra and quagga mussels. In 2003, Asian clams were discovered in the water intake for Yankton, SD; this is the closest known population. Asian clams have been documented in many of the Midwest states, but no populations are reported close to ND (Brooks and Schlueter 2004).

#### **2.13.3.2.6. Asian Carp (Four Species)**

The black carp (*Mylopharyngodon piceus*) has been approved for release for stocking commercial aquaculture ponds to control snails and could escape into the wild just as the other three species of Asian carp, the silver (*Hypophthalmichthys molitrix*), bighead (*H. nobilis*) and the grass carp (*Ctenopharyngodon idella*) have. The latter three species were released in the 1970s, 1980s, and early 1990s for aquaculture and pond applications in southern states. Some of these fish escaped and have now developed large wild populations in the Missouri River basin (Brooks and Schlueter 2004).

Large numbers of bighead carp have been reported "in strikingly large numbers" below Gavins Point Dam, near Yankton, SD. Gavins Point Dam is the first barrier on the

Missouri River. If Asian carp pass this dam and others on the Missouri River, they may proceed up the Missouri River and eventually impact recreation in North Dakota (Brooks and Schlueter 2004).

These carp also have the ability to capitalize on inundated river habitats such as upper Lake Sakakawea and upper Lake Oahe in North Dakota. The bighead carp, a plankton feeder, may compete for food with paddlefish and bigmouth buffalo, as well as with forage fishes. All three species compete for food with the larval stages of native sport fish. Although the extent of their impact and distribution in the Missouri River is largely unknown, efforts are currently being implemented to keep these species out of ND waters (Brooks and Schlueter 2004).

#### **2.13.3.2.7. Round Goby (*Neogobius melanostomus*)**

The round goby was introduced, via ballast water, into the St. Clair River and vicinity on the Michigan-Ontario border, where several collections were made in 1990. They can spawn several times per year, grow to about 10 inches long, are aggressive, and compete with native bottom-dwellers. The numbers of native fish species have declined in areas where this goby has become abundant (Brooks and Schlueter 2004). The round goby has been found to prey on darters, other small fish, and lake trout eggs and fry in laboratory experiments (Marsden and Jude 1995). The potential range of the round goby includes North Dakota and would do well in most of North Dakota's water bodies.

### **2.14. AIR QUALITY**

#### **2.14.1. DEFINITIONS**

The air quality at a location is typically described in terms of the concentrations of various pollutants in the atmosphere. The significance of impacts to air quality, measured in terms of ground level pollutant concentrations, is determined by comparisons with Federal and State ambient air quality standards (AAQS).

#### **2.14.2. NORTH DAKOTA AIR QUALITY**

The state of North Dakota has relatively clean air. The North Dakota Department of Health regularly monitors ambient air quality throughout the state. Ambient air quality monitoring stations collect data on pollutant concentrations and include sulfur dioxide, particulate matter, nitrogen dioxide, and ozone along with meteorological parameters. The results of the data indicate that pollutant concentrations are well within the Federal and State AAQS set at levels to protect human health and welfare (O'Clair 2006).

### **2.15. NOISE**

#### **2.15.1. NOISE REGULATIONS**

Under the Noise Control Act of 1972 and its amendments (Quiet Communities Act of 1978; USC, Title 42, Parts 4901-4918), states have authority to regulate environmental noise, and governmental agencies are directed to comply with local community noise statutes and regulations.



### **2.15.2. NOISE CONDITIONS**

Noise conditions in the project area vary depending on recreational usage. The noise condition is generally low because the majority of the project area is located a substantial distance from any significant noise source. Some recreation activities with the potential to produce enough noise to disturb other recreators include hunting with a rifle or muzzleloader; boating, waterskiing, or fishing using motorboats; jet-skiing; off-road vehicle use; and snowmobiling.

Even moderate noise caused by recreation activities such as picnicking and trail hiking can disturb nearby wildlife. Disturbance to wildlife can be reduced by vegetated buffer zones between recreation facilities and areas devoted to wildlife habitat, and by restrictions on vehicular use in portions of wildlife management areas.

### **2.16. VISUAL QUALITIES**

Visual qualities consist of natural and manmade features that give a particular environment its aesthetic qualities. Landscape character is evaluated to assess whether the project will appear compatible with the existing features or would contrast noticeably with the setting and appear out of place. Visual sensitivity includes public values, goals, awareness, and concerns regarding visual quality.

#### **2.16.1. LANDSCAPE CHARACTERISTICS**

Lake Sakakawea is more than 170 miles long and winds westward in massive S-curves to the Montana border. Water depth of up to 180 feet is measured at the Garrison Dam near the lake's eastern end. The project area is a combination of fields, rolling grasslands, and rigid bluffs. While grazing occurs on much of the project, wildlife areas surround large portions of Lake Sakakawea and include the 15,000-acre Audubon National Wildlife Refuge. At the western end of the project area, the badlands of North Dakota, composed of tiered and multicolor buttes, stratified canyons, and hoodoos (tall thin spires of rock that protrude from the bottom of arid basins and badlands) begin to emerge near the confluence of the Little Missouri and the Missouri River. The term "badlands" attests to the intricate, deeply dissected nature of the land, with gullies, buttes, and a maze of short, steep ridges that make travel through such areas difficult (USGS 2006c). Small areas of forested ravines, coulees, and countless inlets and bays provide habitat for residential and migratory wildlife. The entire lake is an important resting stop for numerous waterfowl, wading birds such as whooping cranes, and shore birds such as the least tern and piping plover. Groups and individuals interested in wildlife and scenic opportunities frequently visit Lake Sakakawea.

#### **2.16.2. VISUAL SENSITIVITY**

The project area encompasses the route that the Lewis and Clark expedition traveled 200 years ago. In fact, Lewis and Clark spent more time in the Lake Sakakawea south shore area than anywhere else on their journey (Sakakawea South Shore 2006). Visitors interested in the historic journey of Lewis and Clark often book river trips with one of the

local outfitters and travel the river downstream to experience the area's topographical features as Lewis and Clark once did.

Lake Sakakawea State Park is the western-most point on the North Country National Scenic Trails system. This non-motorized trail, once completed, will stretch over 3,200 miles from the Missouri River in North Dakota to the shores of Lake Champlain in New York, linking communities, forests, and prairies across seven northern states (National Scenic Trails 2006). When completed, through the efforts of many people, the trail will become the longest continuous hiking trail in the United States. The trail allows hikers to experience a variety of features, from clear-flowing streams in the east to thick Northern woods, and from vast prairies to clean lakes in the west.

The Audubon National Wildlife Refuge was originally established as Snake Creek National Wildlife Refuge in 1955 to compensate for habitat lost when Garrison Dam flooded Missouri River bottom lands. It provides habitat for a variety of wildlife (USFWS 2006b). The refuge was renamed in 1967 in honor of John James Audubon, a 19th century naturalist and wildlife artist, who spent the summer of 1843 in what is now northwestern North Dakota collecting and painting northern plains wildlife. The refuge provides opportunities for viewing a variety of waterfowl and other birds, particularly during nesting season, and wildlife activity during most of the year. Common wildlife species include white-tailed deer, mule deer, ring-necked pheasant, porcupine, sharp-tailed grouse, and chipmunks.

Land uses in the project vicinity are predominantly rural and generally do not detract from the scenic views. The Garrison Dam/Lake Sakakawea project is an exceptional scenic landmark in this region of North Dakota. The only distractions in the area's aesthetic environment includes large power transmission lines and supporting stations that are located mostly in the vicinity of the dam embankment and power house; the area's largest industrial site located near Beulah, where lignite coal is processed into natural gas and electricity; and various mining activities.

## **2.17. CULTURAL RESOURCES**

### **2.17.1. THE PROGRAMMATIC AGREEMENT AND ITS INTEGRATION INTO THE MASTER PLAN**

The 2004 Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act, as amended (PA) is an attempt to address all problems associated with cultural and historic resource impacts involved with the ongoing operation and maintenance of the Missouri River system of main stem dams. This document, which is provided in Appendix F, outlines the processes through which affected Tribes, agencies and interested parties will consult with the U.S. Army Corps of Engineers (Corps) on issues directly affecting important historic and cultural resources. These processes are essential in order for all aspects of the PA to be integrated into the Master Plan.

The United States Department of Defense recognizes its trust responsibilities to federally recognized Indian Tribes and has established an American Indian and Native Alaskan Trust policy that directs its agencies, including the Corps, to work with Tribes in a manner that incorporates tribal needs, traditional resources, stewardship practices, and the development of viable working relationships. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, outlines policy and criteria establishing regular and meaningful consultation and collaboration with tribal officials in the development of federal policies having tribal implications. It also strengthens the United States government-to-government relationships with Indian tribes, and reduces the imposition of unfunded mandates upon Indian tribes. The preparation of this Master Plan included a pre-decisional PA consultation and a pre-decisional consultation on the preliminary draft Master Plan, with Tribal comments incorporated or addressed prior to the preparation of the draft Master Plan and its distribution for public review and comment.

Though PA is limited to the application and enforcement of historic preservation and protection laws, it provides the opportunity to develop a dialogue and forum for the various tribes and agencies to begin addressing all resources considered sacred or important. During preparation of this Master Plan, Tribal perspectives were sought on Master Plan issues to enable the selected resource plan to be responsive to the needs of Tribal users of the project area, as well as to ensure that potential impacts on cultural resources as well as other resources were adequately identified and addressed. Five Native Americans, one of whom represents the Bureau of Indian Affairs, are members of the Steering Committee that has provided input and guidance to the Corps during the entire master planning process. Many comments were received from Tribal members at the public scoping meeting in New Town on August 19, 2005, which had the highest attendance of the four public scoping meetings.

Under the PA, affected Tribes and Tribal Historic Preservation Officers (THPO's), State Historic Preservation Officers (SHPO's), the Advisory Council for Historic Preservation (ACHP), and other consulting parties shall be provided the opportunity to participate in the development and implementation of agreements, management plans, and activities developed or required under the PA. The specific process is outlined later in this chapter. This process will be followed for the Lake Sakakawea Master Plan/Programmatic Environmental Assessment (EA) to ensure that the concept plans for development and resource management will be able to avoid or minimize (and as a last resort mitigate for) any potentially significant effects on the quality of the environment. In addition, each new development activity that is included in concept form in the Master Plan will be consulted on with all interested PA representatives when it is proposed for implementation. This pre-decisional consultation will be integral to identifying any potentially significant impacts and determining ways of avoiding, minimizing (and, as a last resort, mitigating) them. The consultation will be ongoing until a consensus is reached on the proposed development and the appropriateness of a site-specific EA and Finding of No Significant Impact (FONSI). This process will ensure compliance with all environmental laws, regulations, and Executive Orders, including those dealing with

cultural resources and Traditional Cultural Properties and access by Tribal members to these resources.

The PA provides for the drafting and implementation of a five-year plan that outlines how the Corps will conduct its Main Stem System Cultural Resources Program and various program components individually called for in the PA for the coming five years and following five year periods thereafter. It also provides for the development and implementation of a monitoring program to provide continued oversight of historic properties located on federal land managed by the Corps and to collect information on site conditions and effects (including but not limited to, erosion, recreational, agricultural and other encroachment, and looting and vandalism). The Corps will use this information to plan and implement law enforcement and other preventive or corrective management actions. A third proviso in the PA is for the development of a public and agency educational program concerning the need to avoid cultural areas and to leave archaeological sites and their material remains undisturbed. More details on protection of cultural resources are provided in the Cultural Resources Protection discussion in section 2.17.3 of the Master Plan/EA.

The PA attachments address procedures to follow to comply with the Native American Graves Protection and Repatriation Act (NAGPRA) in the event of inadvertent discoveries, and the Archeological Resources Protection Act (ARPA), which includes provisions for civil and criminal penalties for violations.

#### **2.17.2. CULTURAL RESOURCES MANAGEMENT**

The Lake Sakakawea project contains 1,511 recorded cultural resource sites and 481 isolated finds to date. So far, 17 historic properties are considered eligible for listing on the National Register of Historic Places (NRHP), and 1,244 are unevaluated. All unevaluated sites are treated as potentially eligible for listing on the NRHP, and both eligible sites and unevaluated sites are taken into consideration when the Omaha District reviews undertakings. The Corps, in partnership with the PA signatories and interested parties, has completed a Cultural Resources Management Plan (CRMP) for the Lake Sakakawea project. The CRMP that is available to the general public are provided in Appendix F. At the time this Master Plan/EA was prepared, the Omaha District was in the process of performing site NRHP eligibility evaluations on all the Missouri River main stem reservoirs. In addition, the Omaha District was cultural site inventorying cultural sites on all Corps lands in McKenzie County, ND, including areas that normally would be inundated if the lake was not drought-affected.

Resources that are either on the NRHP or eligible for listing on the NRHP are called historic properties. These properties include those from any prehistoric or historic period. In general, there are several methods for managing the historic properties. If a significant site is not being threatened by any impacts such as erosion, vandalism, agricultural impacts, or construction, it is best to leave the site undisturbed. Sites are best protected by a thick growth of vegetation, which serves as a type of disguise for the features within the site. If a significant site is being threatened in some manner, it is important to remove the threat or to protect the site.

Actions to prevent or correct adverse effects to cultural resources or Traditional Cultural Properties (sacred sites, traditional plant resource areas, etc.) are provided for in the Master Plan. For each Lake Sakakawea management area in the Resource Plan (Chapter 7), site-specific resource objectives include the obligation to “preserve, monitor, and protect any cultural resources” and to “provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the PA”. This is also included in the project-wide resource objectives listed at the end of Chapter 1. The need for 1) evaluating potential adverse effects to cultural resources and Traditional Cultural Properties from proposed development and management activities and 2) determining how to avoid, minimize, or (as a last resort) mitigate such potential adverse effects is also included in the information provided for each management area.

As stated earlier, under the PA, affected Tribes and THPO's, SHPO's, ACHP, and other consulting parties shall be provided the opportunity to participate in the development and implementation of agreements, management plans, and activities developed or required under the PA. Consulting parties are afforded no less than 30 calendar days from receipt of a letter notifying the parties of a proposed undertaking and requesting comment or consultation. The request includes information from the literature and records search and a description of the project and its area of potential effect, including pertinent maps. The letter is sent to each PA representative, with a copy to the head of the agency or tribal government, as early as possible and prior to making any decisions about the proposed undertaking or matter. Further information or coordination of a site visit is provided upon request. In all circumstances the parties attempt to identify and preserve cultural resource sites and avoid affecting them. If avoidance is not possible, the Corps works with the consulting parties to minimize effects to such sites.

### **2.17.3. CULTURAL RESOURCES PROTECTION**

A large percentage of cultural resource sites that are listed on the NRHP, potentially eligible for the NRHP, or unevaluated are being impacted by a variety of human activities. The Corps' Omaha District acknowledges the importance of these irreplaceable cultural resources and will take the necessary steps to monitor, reduce, or eliminate impacts before the sites are destroyed. Development needs for all management areas include the need to “provide appropriate protection for any cultural resources”, as any management area may have undiscovered cultural resources and/or Traditional Cultural Properties known to only a few. Actions to be taken include, but are not limited to:

- Comply with the 2004 Programmatic Agreement;
- Modify agricultural and grazing leases as necessary to protect cultural resource sites and potentially significant cultural resource sites;
- Allow no additional recreation development on cultural resource sites within existing recreation areas unless appropriate mitigation measures are implemented;
- Stabilize cultural resource sites being destroyed by shoreline erosion;
- Continue public education;
- Monitor erosion; and
- Pursue multi-jurisdictional enforcement actions to control vandalism.

Again, under the PA, affected Tribes and THPO's, SHPO's, ACHP, and other consulting parties shall be provided the opportunity to participate in the development and implementation of protection activities.

## **2.17.4. CULTURAL HISTORY (ADAPTED FROM THE 2006 LAKE SAKAKAWEA CULTURAL RESOURCES MANAGEMENT PLAN)**

### **2.17.4.1. Oral Cultural History**

The indigenous peoples of the upper Missouri River valley, specifically the Mandan, Hidatsa and Arikara, have their own creation stories and histories. Generally, tribal histories place the Mandan and Hidatsa as living in the Missouri River valley since their creation. Long and arduous journeys undertaken by the Arikara placed them as living in areas west of the Missouri River in the distant past. All of these tribes have formed a close spiritual bond with the Missouri; for example, the Hidatsa call the Missouri River Grandfather.

Oral histories of creation and tribal origin are often at odds with the archeological record, which has been assembled primarily in the last hundred years, contrasting with tribal origin stories and oral histories that are centuries old. Tribal nations understand and define themselves based upon these origin stories and oral histories, so it is important to remember that the archeological record and method of understanding the indigenous Nations living near the Missouri River is in its relative infancy and should not be accepted as definitive or conclusive. The following cultural history is compiled from the archeological perspective and the historical record.

### **2.17.4.2. Cultural History of the Upper Great Plains**

The stages of cultural development in the Great Plains are defined by changes in technology, settlement, and subsistence. None of the cultural stages are considered confined to their particular range of dates and can fluctuate across regions within the Great Plains (Willey and Phillips 1958; Wedel 1961; Gregg et al. 1996:77-90). The earliest known peoples lived at the same time as extinct megafauna such as mastodons, giant sloths, and giant bison. This era is dominated by highly mobile hunting and gathering bands living a nomadic lifestyle and exploiting, by choice, a limited number of resources.

By about 4500 B.C., most of the megafauna that populated the continent had become extinct and climatic conditions had changed. These factors resulted in changes in the cultural traditions of the Great Plains, including an increased diversity in the stone tool assemblage (including ground and polished tools), an increased reliance on smaller and more varied game species, and use of a wider array of plant foods. These changes were followed by an increase in population and gradual sedentism, that is, gradual settling in villages (Willey and Phillips 1958). Unique to the Great Plains is the continuing heavy reliance on bison hunting as a mainstay of the economy.

A trend toward increased sedentism, intensified horticultural activity, expanding regional trade networks, and the elaboration of ceremonial activities and mortuary practices characterizes the next cultural change, around A. D. 1 (Griffin 1967). Technological changes were also occurring, such as the adoption of bow and arrow weaponry and widespread use of ceramic vessels for storage and cooking.

The subsistence patterns of these peoples focused on the use of local wild plant foods. They supplemented this diet with domesticated seeds and hunting. A gradual increase in the importance of maize agriculture is noted throughout the Midwest during this period (Ford 1974, 1977; Fritz 1992). Archaeological data indicates that gardening probably consisted of a starchy seed complex (Ford 1981) of goosefoot, smartweed, and maygrass.

By around 950 A.D., Plains peoples were living in permanently settled villages with wattle-and-daub (or occasionally stone) structures, small projectile points, abundant bone tools, stones for grinding seeds and other plant parts, and cord-marked pottery.

In the proto-historic timeframe (from about A.D. 1500 to 1800), considerable overlap with the historic period occurs because of the introduction of European cultural influences and technology. Euro-American trade goods included a wide range of materials made from copper, brass, iron, glass, and even stone in the form of gunflints. Throughout this period trade relations waxed and waned between the various tribes and the Euro-Americans.

The historic period dates from approximately A.D. 1800 to the present, and marks the beginning of written accounts in the area. The Mandan and Hidatsa tribes were major traders on the northern Great Plains, and were uniquely distinguished from all other Plains tribes, being atypically friendly with white men and friendly even with their enemies when it came time to trade valuable goods. However, their openness to other tribes and Euro-Americans ultimately made them vulnerable to periodic epidemics and aggressive enemies who would take advantage of an epidemic as a good time to attack.

#### **2.17.4.3. Cultural History of the Dakotas**

The Mandan are thought to have arrived on the Great Plains from the southeast area of the Mississippi River between 1200 and 1300 A.D. They resembled several cultures, borrowing from the Plains - Woodland cultures and the Eastern Mississippi cultures (Bruner 1961). From about 1250 to 1500 A.D., the Mandan Indians lived in very small communities or hamlets spread over a large area that would become the states of North and South Dakota. Cultural integration was limited and there were distinct dialect differences. The hamlets were fairly isolated from each other geographically and were politically independent. "Horticulture and hunting were of equal importance" (Bruner 1961:193); the villagers were flexible and adjusted to shifting environmental conditions to make strategic use of their resources from year to year. Bottomlands along the rivers were used for agriculture, grasslands for large game, wooded areas for winter protection and providing wood for heat, and rivers and streams for fresh water and for fish when other sources of food were not obtainable, such as during drought conditions. In 1500 the Mandan were still considered indigenous, apparently uninfluenced by white contact (Bruner 1961).

The years spanning 1500 to 1750 A.D., with emphasis on the 1600 to 1740 timeframe, were the years of the greatest power, largest population (estimated between 9,000 and 15,000), and most developed culture of the Mandan tribe. The Mandan and Hidatsa tribes gradually became the central marketplace of the Dakota area. By the 1670s fur-



trading companies had not yet built forts and posts close to the tribes and were attracting other tribes to posts built at strategic locations at the mouths of rivers. This system gradually evolved into certain northern tribes, such as the Assiniboine, playing the role of middlemen (Lehmer 1971). The Mandan and Hidatsa reportedly had European goods long before their own direct contact with white men. It is clear the Assiniboine tribe did have direct contact with white traders and then subsequently traded with the Mandan and Hidatsa tribes until traders began to range further, first from headquarters, and later from established posts or forts across the northwest. In any event, several major changes began in the late 17th and early 18th centuries: the horse was introduced to Indians of the Dakotas and the rest of the Great Plains; European trade goods were increasingly available; trading began to more directly involve the Mandan; and displacement of the eastern tribes caused more conflict between tribes in the Dakotas and the rest of the Great Plains. By the early to mid 1700s these changes seriously affected the balance of power and the trading systems in the Dakota area. In 1710 the Mandan did not have guns or horses, but by 1750 they had both.

The displacement of eastern tribes and the resulting conflicts across the Dakotas led to the consolidation of the small Mandan villages into nine large towns within a 20-mile radius of the Heart River. It is estimated there were 12 or 13 Hidatsa towns on the Upper Missouri River located near the Heart and Knife Rivers. The decline of the Mandan began as power began to shift away from the sedentary lifestyle of the eastern Indians to the nomadic warriors of the High Plains. The smallpox epidemic of 1780-1781 reduced the Mandan population by 68 percent.

The first recorded European exploration, by fur traders, within the current state of North Dakota was conducted in the early 1700's, led by the French-Canadian LaVerendrye (Ritterbush 1996). Other early fur trader-explorers of the Missouri River basin included Bourmont (Norall 1988), the Mallet Brothers (Blakeslee 1995), and Truteau (Faye 1943). Fur trade was the medium by which Euro-American and Native groups first interacted in the Dakotas. Documents from these initial ventures are the earliest written records of the natural environment and native occupants of the region. Fur trade posts were not established within the Dakota Territory until after 1800. However, posts were established along the east bank of the Red River in the 1790s (Ritterbush 1996).

Between 1776 and 1805 the Arikaras were firmly established as trade partners with U.S. fur companies (Rogers 1990). The next period in their history (1806-1835) saw a drastic change in the relationship as fur traders increased efforts to bypass the Arikara middlemen. The Arikara fought to maintain their position, leading to the Arikara War of 1823, which was the first U.S. military engagement against a Missouri River tribe.

With the Louisiana Purchase, the United States Government had authorized a series of official U.S. Army expeditions to explore the newly acquired territory. The first of these expeditions, commanded by Captain Meriwether Lewis and Lieutenant William Clark, was conducted between 1804 and 1806. It was designed to traverse the western half of the continent by traveling up the Missouri River, across the Great Divide, and down the Columbia River. Lewis and Clark commanded a small force of 28 soldiers and were

accompanied by Sakakawea, the Hidatsa wife of a French trader who had been hired as a scout. The Lewis and Clark expedition was befriended and kept alive by the Mandan and Hidatsa during the winter they spent on the upper Missouri. These early explorers made offers of alcohol to the Arikara, but were politely rebuffed, as the Arikara wondered aloud why anyone would want to be made foolish by the white men's liquor.

By the 1820s, the American Fur Company was coming into prominence in the Dakota Territory (Robinson 1966). By 1822 the NorthWest Company and the Hudson Bay Company were competing fiercely with each other as well as with free traders and an increasing number of tenant traders, eventually leading to their merger. Several fortified posts were established along the Missouri River for the fur trade at this time.

The towns of the Mandan were further consolidated into two towns and moved north to the Knife River. Beaver trade flourished until the late 1830's, when trade in the region turned to bison robes. This change in preferred furs allowed the Arikara to once again become a major participant in the fur trade (Rogers 1990). Steamboats provided the ideal form of transportation for heavy buffalo robe shipments and made the Upper Missouri much more accessible to a flood of visitors of all types.

The Dakota Territory has a rich military history, generally associated with conflicts between the U.S. Government and the Native Indian population. The native inhabitants of the Great Plains saw other tribes forced onto the Great Plains by the westward pressure of Euro-American settlement. This influx of new populations and the introduction of the horse led to what became known as the Plains Indian way of life. This life was very different from agriculturally based societies like the Arikara, Mandan, and Hidatsa. Those groups more inclined to hunting and gathering, such as the Lakota, Kiowa, and Cheyenne, came into conflict with the more sedentary groups. Immigrant tribes moved to reservations by the U.S. Government also added to the mix of cultures and increased the levels of conflict (Mooney 1898; Grinnell 1910; Newcomb 1950; Secoy 1992).

The steamboats brought many things up the river, but none had as much impact on the native population as the diseases transported on these ships. In 1833 the steamboat Yellowstone brought cholera up the Missouri River and into Kansas. Another outbreak of cholera occurred in 1849, as numerous steamboats brought infected persons and corpses up the river into Dakota Territory (Chittenden 1903; Gerber 1974). The Saint Peters, a steamboat owned by the American Fur Company, introduced smallpox into Dakota Territory in 1837 (Gerber 1974, Robertson 2001). In 1864, smallpox was reintroduced by another steamboat (Stearn and Stearn 1945).

Steamboats were also linked to the U.S. military actions of the region. Officers working in the area of the river could acquire ships for military service and often did.

As government treaty payments were made, and annuities for native populations grew, the steamboats were linked directly to the numerous tribes of the Missouri River. When game populations became depleted by the demands and needs of Euro-Americans, indigenous populations endured starvation and it became necessary for groups and

individuals to develop other means of sustenance. Small winter camps, developed along the Missouri River above Fort Berthold for chopping wood and selling it to steamboat captains, became an important element of the local economy (Malouf 1951). It was unfortunate that these ships also brought alcohol, a cargo as deadly to the native cultures as the many diseases the ships transported. The use of alcohol among Missouri River indigenous Nations, however, was largely shunned until tribal members who fought for the U.S. during World War II came home from the war and its use became more widespread.

Steamboat activity peaked in 1866-67, but decreased rapidly, as railroads became the preferred mode of transport. Much of the early Euro-American settlement of the Dakotas was directly influenced by the advancing railroad. These lines of transportation progressed in segments across the landscape as the native peoples were forced to cede lands to the government and then were pushed onto reservations. The towns established across the Dakotas reflected the paths of these railroads.

The 1880s in Dakota Territory history is referred to as the Great Dakota Boom by Robinson (1966). During this period settlers from Norway, Germany, Russia, and various Midwesterners established homesteads in the eastern two-thirds of the Dakotas (Hudson 1996). As these homesteaders flocked into the territory, the population soared. These new settlers were enticed by recent uncharacteristically high moisture levels in the region that suggested a humid climate (Brookings County History Book Committee 1989; Briggs 1996).

The second wave of Dakota Territory settlement began in 1898 and continued waveringly until the First World War (Robinson 1966). This new explosion of settlers followed a national trend after the depression years of the 1890s. The nation was growing rapidly after the depression, and the U.S. faced the threat of a food shortage at the time people were moving onto lands taken from indigenous Nations. As new farmers established small farmsteads, especially in the western Dakotas, they began to become aware of the conditions they faced. The semiarid land was not suited for most of the farming practices they had become accustomed to in other, more humid areas.

Today, many people know South and North Dakota as Indian Country. Within the borders of North Dakota are five reservations consisting of lands retained through treaties by ancestors of Affected Tribes so that the generations to come would have a place to live. As the Euro-Americans proceeded westward across the Great Plains, the U.S. government attempted through a variety of means to separate tribal peoples from their lands and to force assimilation upon the indigenous Nations. The Missouri River indigenous Nations, however, clung as tightly as they could to their lands and their traditional ways of life and are still here to practice most of them today.

## 2.18. SOCIOECONOMIC CHARACTERISTICS

### 2.18.1. POPULATION

According to the 2000 Census, the population of North Dakota was 642,200. This ranks North Dakota as 47<sup>th</sup> of the 50 States and District of Columbia in terms of population. With 68,976 square miles of area, the population density in 2000 was 9.3 persons per square mile. By comparison, the 2000 population density for the entire United States was 79.6 persons per square mile.

The area of influence is the area whose residents are most likely to visit Lake Sakakawea. In the 1978 Garrison Dam – Lake Sakakawea Master Plan, this area of influence was identified as extending out 120 miles, or about a 2-hour drive, from Lake Sakakawea. The area of influence contains 6 counties surrounding Lake Sakakawea and an additional 20 counties that are not contiguous to the lake. Table 2.18.1 presents U.S. Census population totals from 1980 to 2000 and population projections to 2020 for North Dakota and the 26 counties in the Lake Sakakawea area of influence.

**Table 2.18.1. Historical and Projected Population for North Dakota and 26 Area Counties.**

County	1980	1990	2000	Change, 1990 to 2000	2010	2020	Change 2000 to 2020
<i>Contiguous</i>							
Dunn	4,627	4,005	3,600	-10.1 %	3,283	2,927	-18.7 %
McKenzie	7,132	6,383	5,737	-10.1 %	5,197	4,924	-14.2 %
McLean	12,383	10,457	9,311	-11.0 %	8,820	8,423	-9.5 %
Mercer	9,404	9,808	8,644	-11.9 %	7,751	7,267	-15.9 %
Mountrail	7,679	7,021	6,631	-5.6 %	6,518	6,503	-1.9 %
Williams	22,237	21,129	19,761	-6.5 %	17,959	16,679	-15.6 %
Subtotal:	63,462	58,803	53,684	-8.7 %	49,528	46,723	-13.0 %
<i>Noncontiguous.</i>							
Adams	3,584	3,174	2,593	-18.3 %	2,208	1,963	-24.3 %
Billings	1,138	1,108	888	-19.9 %	775	679	-23.5 %
Bottineau	9,239	8,011	7,149	-10.8 %	6,661	6,202	-13.2 %
Bowman	4,429	3,596	3,242	-9.8 %	3,181	3,038	-6.3 %
Burke	3,822	3,002	2,242	-25.3 %	1,908	1,686	-24.8 %
Burleigh	54,811	60,131	69,416	15.4 %	72,531	74,727	7.6 %
Divide	3,494	2,899	2,283	-21.2 %	1,796	1,420	-37.8 %
Emmons	5,877	4,830	4,331	-10.3 %	4,105	3,710	-14.3 %
Golden Valley	2,391	2,108	1,924	-8.7 %	1,800	1,658	-13.8 %
Grant	4,274	3,549	2,841	-20.0 %	2,318	1,890	-33.5 %
Hettinger	4,275	3,445	2,715	-21.2 %	2,228	1,877	-30.9 %
Kidder	3,833	3,332	2,753	-17.4 %	2,385	1,995	-27.5 %
McHenry	7,858	6,528	5,987	-8.3 %	5,760	5,701	-4.8 %
Morton	25,177	23,700	25,303	6.8 %	27,481	29,521	16.7 %

Oliver	2,495	2,381	2,065	-13.3 %	1,939	1,799	-12.9 %
Renville	3,608	3,160	2,610	-17.4 %	2,352	2,266	-13.2 %
Sheridan	2,819	2,148	1,710	-20.4 %	1,477	1,364	-20.2 %
Slope	1,157	907	767	-15.4 %	675	605	-21.1 %
Stark	23,697	22,832	22,636	-0.9 %	22,270	22,360	-1.2 %
Ward	58,392	57,921	58,795	1.5 %	56,728	55,809	-5.1 %
Subtotal:	236,370	218,762	222,250	1.6 %	220,578	220,270	-0.9 %
Area Total:	289,832	277,565	275,934	-0.6 %	270,106	266,993	-3.2 %
N. Dakota	652,717	638,800	642,200	0.5 %	645,325	651,291	1.4 %

Sources: Historical population data: U.S. Census Bureau, Decennial Census.

Population projections: ND State Data Center at ND State University, Fargo, ND, 2002.

Although the population of North Dakota declined by 2.13 percent from 1980 to 1990, it enjoyed a modest increase of 0.53 percent from 1990 to 2000 and has been projected to increase by 1.42 percent between 2000 and 2020 (ND State Data Center 2002). Although the counties contiguous to Lake Sakakawea all appear to be decreasing in population, the population estimates in the Census are approximately equal to the number of permanent residents and may include only a small fraction of the seasonal residents (Harper 2006). The seasonal population consists of persons who occupy homes they own or rent in subdivisions adjacent to project lands only on a seasonal basis. The seasonal population is important for determining recreation facility demand and needs at Lake Sakakawea. The seasonal population was estimated by multiplying the average household size in the county by the number of homes vacant on April 1, 2000 (when the U.S. Census was taken) that were recorded as being for occasional, seasonal, or recreational use. It is assumed that seasonal residents in the counties contiguous to Lake Sakakawea are not permanent residents of these counties. The estimated seasonal population and total (permanent plus seasonal) population of the counties contiguous to Lake Sakakawea in 2000 are provided in table 2.18.2.

**Table 2.18.2. Estimated Seasonal, Permanent, and Total Population of Counties Contiguous to Lake Sakakawea in 2000.**

County	Vacant Housing Units	Seasonal Vacant Units*	Average Household Size	Estimated Seasonal Residents	Permanent Residents	Total Residents	Seasonal as % of Total
Dunn	587	263	2.57	676	3,600	4,276	16 %
McKenzie	568	162	2.64	428	5,737	6,165	7 %
McLean	1,449	923	2.40	2,215	9,311	11,526	19 %
Mercer	1,056	424	2.55	1,081	8,644	9,725	11 %
Mountrail	878	521	2.53	1,318	6,631	7,949	17 %
Williams	1,585	426	2.38	1,014	19,761	20,775	5 %
<b>TOTAL</b>	<b>6,123</b>	<b>2,719</b>		<b>6,732</b>	<b>53,684</b>	<b>60,416</b>	<b>11 %</b>

\*Includes housing units for seasonal, occasional, or recreational use. Does not include the following categories: for rent; for sale; rented or sold, not occupied; recreational vehicles; and other vacant.

Sources:

U.S. Census Bureau, 2000 Decennial Census. Gregory Harper, U.S. Census Bureau Statistician/Demographer, personal comm., 2006. Ellen Baker Wilson, U.S. Census Bureau Housing Statistician, personal comm., 2006.

In 2000, 55.8 percent of the North Dakota population was classified as urban, while 44.2 percent was classified as rural. This compares to an average of 79.0 percent classified as urban and 21.0 percent rural for the United States as a whole. Although nearly all the growth in North Dakota's population occurs in the largest cities, the cities are small by national standards. The two largest cities in the area of influence are Bismarck, with a 2000 Census population of 55,532, and Minot, with a population of 36,567. Table 2.18.3 lists the U.S. Census population, 1980-2000, for North Dakota cities in the area of influence.

**Table 2.18.3. Population of Cities in the Lake Sakakawea Area of Influence, 1980 to 2000.**

City	County	Census 1980	Census 1990	Census 2000	Change, 1990-2000
<i>In Contiguous Co.:</i>					
Beulah	Mercer	2,908	3,363	3,152	-6.3 %
Garrison	McLean	1,830	1,530	1,318	-13.9 %
Hazen	Mercer	2,365	2,818	2,457	-12.8 %
New Town	Mountrail	1,335	1,388	1,367	-1.5 %
Parshall	Mountrail	1,059	943	981	4.0 %
Riverdale	McLean	unincorp	283	273	-3.5 %
Stanley	Mountrail	1,631	1,371	1,279	-6.7 %
Tioga	Williams	1,597	1,278	1,125	-12.0 %
Watford City	McKenzie	2,119	1,784	1,435	-19.6 %
Williston	Williams	13,336	13,131	12,512	-4.7 %
<i>In Non-Contig. Co.:</i>					

Beach	Golden Valley	1,381	1,205	1,116	-7.4 %
Belfield	Stark	1,274	887	866	-2.4 %
Bismarck	Burleigh	44,485	49,256	55,532	12.7 %
Crosby	Divide	1,469	1,312	1,089	-17.0 %
Dickinson	Stark	15,924	16,097	16,010	-0.5 %
Glen Ullin	Morton	1,125	927	865	-6.7 %
Hebron	Morton	1,078	888	803	-9.6 %
Mandan	Morton	15,513	15,177	16,718	10.2 %
Minot	Ward	32,843	34,544	36,567	5.9 %
Velva	McHenry	1,101	968	1,049	8.4 %

Source: U.S. Census Bureau, Decennial Census.

### 2.18.2. RACE AND ETHNICITY

The population of North Dakota is primarily White, representing 92.5 percent of the population in 2000. American Indians and Alaska Natives, most of whom are members of one of the Tribes living on one of the five Tribal reservations in North Dakota, are numerically the largest minority and accounted for 4.9 percent of North Dakota's population in 2000. The 2000 Census reported 1.2 percent of the population as Hispanic or Latino, and the remaining 1.4 percent consisted of all other racial groups.

According to the 1990 U.S. Census, the North Dakota American Indian and Alaska Native population was 25,305 (25,256 American Indian only), with 60.4 percent living on reservations. The 2000 U.S. Census reported the American Indian and Alaska Native population in North Dakota to be 31,308 (28,778 American Indian only), an increase of 23.7 percent over the 1990 population. This compares to a population growth of 0.53 percent for all races in North Dakota. Based on these figures from 1990 to 2000, there were contradictory population trends for counties that contained portions of American Indian reservations or had scattered Tribally owned land; the non-American Indian population was declining, while the American Indian population was increasing. This trend may be a result of increased reporting of American Indian ancestry, higher birth rates in the American Indian population than in the White population, and more net migration out of North Dakota by the White population compared to American Indians.

Five American Indian reservations are located in North Dakota. The 2000 Census population living in the North Dakota portion of each reservation is displayed in table 2.18.4.

**Table 2.18.4. U.S. Census Population of Tribal Reservations in North Dakota, 2000.**

<b>Reservation</b>	<b>Location</b>	<b>Population in ND, 2000</b>
Fort Berthold	North Dakota	5,915
Lake Trenton	North & South Dakota	191
Spirit Lake	North Dakota	4,435
Standing Rock	North & South Dakota	4,044
Turtle Mountain	North Dakota	8,037
Total:		22,892

Source: U.S. Census Bureau, Decennial Census: Census 2000 Redistricting Data; North American Indian Reservations.

One American Indian reservation, Fort Berthold, is located in the Lake Sakakawea region. The Fort Berthold reservation is located in McLean, Mercer, Dunn, McKenzie, Mountrail, and Ward counties. The Fort Berthold reservation covers an area of 988,000 acres. The reservation had a 2000 Census population of 5,915, of which 3,986 were reported as American Indian.

The tribal community within the Fort Berthold reservation, known as the Three Affiliated Tribes, had 10,400 enrolled tribal members in 2000. The Mandan, Hidatsa, and Arikara tribes constitute the Three Affiliated Tribes. Under the Indian Reorganization Act of 1934, the Three Affiliated Tribes are incorporated and operate under a Constitution and By Laws. The Tribal Chairman and the Tribal Council make up the governing body of the reservation. The reservation is divided into six tribal districts. The tribal headquarters is located in New Town, North Dakota.

Ethnic heritage may influence the demand for certain types of recreation facilities. For instance, the holding of powwows is a very important cultural event to American Indians. Therefore, facilities at powwow grounds and camping sites in the vicinity should be adequate to accommodate powwow participants and observers.

### **2.18.3. AGE**

The median age of North Dakota residents is increasing. The birth rate in North Dakota was 12.2 per 1,000 residents in 2000, compared to a national rate of 14.7. While the median age for the State was 36.2 years in 2000, the median age for the U.S. was 35.3 years (U.S. Census Bureau 2000). The fastest rising median ages in North Dakota are found in rural counties. This is attributable to low birth rates and outmigration of the young, either to North Dakota cities or to other states. The only counties in the Lake Sakakawea area of influence that had median ages below 39 years were the counties containing relatively large cities: 32.4 years for Ward County, where Minot is located; 35.9 years for Burleigh County, which includes Bismarck; 36.9 years for Stark County, where Dickinson is located; and 37.4 years for Morton County, which includes Mandan. The median age in 2000 for residents of the following areas was estimated by weighting median age for each county by the county's proportion of the total population of the area. The estimated median ages in 2000 were: 40.6 years for the 6 counties contiguous to the



lake; 37.0 years for the 20 non-contiguous counties in the Lake Sakakawea area of influence; and 37.7 years for the entire 26-county area of influence.

The high median age in the Lake Sakakawea area of influence, especially in the six contiguous counties, indicates a large percentage of the residents are retirees, and thus may have an increased amount of leisure time available for outdoor recreation activities. Other factors influencing increased outdoor recreation participation by the elderly and handicapped may include: increases in the proportion of the elderly in the general population, especially in North Dakota and in the 26-county area of influence; increased mobility among the elderly and handicapped; and improved access to new or upgraded recreation facilities that meet Americans with Disabilities Act (ADA) standards at Corps projects.

High median age also influences the demand for specific types of camping facilities. The Summary of the 1984 Campground Receipt Study (USACE 1986) indicated that nationwide, camping parties using Golden Age or Golden Access passports, issued by the Corps to persons who are at least 62 years of age or who are disabled, respectively, were three times as likely to use motor homes or travel trailers but only one-ninth as likely to camp in tents as were the campers with standard entry permits. As a result, Golden passport holders are much more likely to use electrical hookups. Golden passport holders accounted for over 78 percent of the campers at the East Totten Trail and Wolf Creek campgrounds, and Golden passport users are increasing at the Downstream Campground, from 31.1 percent of the reservations in 2004 to 33.6 percent in 2005. Increased demands at the Lake Sakakawea project for additional and upgraded electrical hookups, as well as upgrades to modernize other campground support facilities, are reflected in the development proposed at Lake Sakakawea campgrounds in Chapter 7, Resource Plan. Upgrades of both campground facilities and day use facilities to meet ADA standards are also included in the development proposed at a number of recreation areas in Chapter 7.

#### 2.18.4. EDUCATION

Educational levels in North Dakota and the Lake Sakakawea area of influence steadily increased between 1990 and 2000, as shown in table 2.18.5, and are expected to continue to increase.

**Table 2.18.5. Educational Attainment of Persons at Least 25 Years Old in the Lake Sakakawea Area of Influence, North Dakota, and the United States, 1990 and 2000.**

Area	HS Grad 1990	HS Grad 2000	Change, 1990-2000	College Grad 1990	College Grad 2000	Change, 1990-2000
Contiguous Counties*	73.2 %	80.1 %	9.4 %	12.9 %	15.7 %	21.1 %
Non-Contig. Counties*	76.8 %	84.0 %	9.3 %	17.7 %	21.9 %	23.7 %
Entire Area of Influence*	76.0 %	83.2 %	9.5 %	15.5 %	20.7 %	33.5 %
North Dakota	76.7 %	83.9 %	9.4 %	18.1 %	22.0 %	21.5 %
United States	75.2 %	80.4 %	6.9 %	20.3 %	24.4 %	20.2 %

\*Percentages in 1990 and in 2000 are based on population-weighted county percentages.

Source: U.S. Census Bureau, Decennial Census.

A larger proportion of North Dakota residents 25 years and older had a high school diploma or higher in 2000 than was the case in the United States as a whole. The percentage of adults attaining a high school diploma in the Lake Sakakawea area of influence was similar to the statewide percentage in both 1990 and 2000 and was higher than the percentage in the United States as a whole. The percentage of persons at least 25 years old in 2000 who had received at least a bachelor's degree was slightly lower in North Dakota and in the area of influence than in the United States as a whole. However, North Dakotans are catching up to the rest of the nation in regard to graduating from a 4-year college. Between 1990 and 2000, the percentage of adults with bachelor's degrees increased by 21.5 percent statewide and by 33.5 percent in the Lake Sakakawea area of influence, higher than the nationwide increase.

The 1982-1983 Nationwide Recreation Survey (National Park Service 1986) found that participation in outdoor recreation rises with increasing levels of education. High school graduates spent over twice as many days and college graduates over three times as many days on outdoor recreation activities as those who did not graduate from high school. Based on these findings, the increase in the percentage of high school and college graduates in North Dakota and in the area of influence would be expected to result in increased demand for outdoor recreation facilities. This increased demand is reflected in the development needs for the various management units in Chapter 7, Resource Plan.

### 2.18.5. EMPLOYMENT

The percentage of workers in North Dakota and in the United States employed in each general category of industry in 1990 and 2000 is provided in table 2.18.6. Changes between 1990 and 2000 indicate shifts in each industry's share of the workforce.

**Table 2.18.6. Percent Employment by Industry in North Dakota and the U.S., 1990 and 2000.**

Industry	ND, 1990	ND, 2000	Change, 1990-2000	US, 1990	US, 2000	Change, 1990-2000
Agriculture, Forestry, Fishing, Hunting, Mining	13.3%	8.2%	-38.4%	3.3%	1.9%	-42.7%
Construction	5.2%	6.2%	20.2%	6.2%	6.8%	9.0%
Manufacturing	6.3%	7.1%	13.0%	17.7%	14.1%	-20.3%
Wholesale Trade	4.3%	3.7%	-13.7%	4.4%	3.6%	-17.9%
Retail Trade	18.5%	12.7%	-31.6%	16.8%	11.7%	-30.5%
Transportation & Warehousing, Utilities	6.9%	5.7%	-16.7%	7.1%	5.2%	-26.7%
Finance, Insurance, and Real Estate	5.4%	5.9%	9.7%	6.9%	6.9%	0.0%
Services	21.1%	33.9%	60.6%	22.5%	35.2%	56.2%
Government	19.0%	16.5%	-13.2%	15.0%	14.6%	-2.7%

Sources: U.S. Census Bureau, Decennial Census; and  
ND State Data Center at ND State University, Census 2000 Profiles, Fargo, ND.

The industries that employed the most people in North Dakota in 2000 were: services; government; retail trade; agriculture, forestry, fishing, hunting and mining; and manufacturing. The percent change of employment by industry shows that North Dakota followed the national trend of fewer people working in the agriculture, forestry, fishing, hunting, and mining trades, as well as in wholesale trade, retail trade, government, and transportation, warehousing, and utilities. Services, construction, and finance/ insurance/ real estate increased at both the State and national level from 1990 to 2000. Going against the national trend, manufacturing increased in North Dakota by 13 percent from 1990 to 2000, despite a 20.3 percent decrease for the United States during this period. Traditionally, North Dakota has been dependent on agriculture, but the economy is becoming a more diversified one in which services and manufacturing play more important roles. This change may favor the growth of the larger communities in the state at the expense of the rural areas and small towns.

The percentage of workers employed in 2000 in each category of industry for North Dakota and for the 6 contiguous, 20 non-contiguous, and 26 total counties in the area of influence are provided in table 2.18.7.

**Table 2.18.7. Percent Employment by Industry in Area of Influence and North Dakota, 2000.**

<b>Industry</b>	<b>Contiguous Counties*</b>	<b>Non-Contiguous Counties*</b>	<b>Entire Area of Influence*</b>	<b>North Dakota*</b>
Agriculture, Forestry, Fishing, Hunting, Mining	16.7 %	8.6 %	10.1 %	8.2 %
Construction	6.4 %	6.2 %	6.2 %	6.2 %
Manufacturing	3.9 %	4.5 %	4.4 %	7.1 %
Wholesale Trade	2.7 %	3.5 %	3.3 %	3.7 %
Retail Trade	11.6 %	12.7 %	12.5 %	12.7 %
Transportation & Warehousing, Utilities	8.3 %	6.2 %	6.6 %	5.7 %
Finance, Insurance, & Real Estate	4.5 %	5.8 %	5.6 %	5.9 %
Services	29.7 %	35.4 %	34.4 %	33.9 %
Government	16.2 %	17.1 %	16.9 %	16.5 %

\*Percentages are based on employment by industry category in each geographical area.

Sources: U.S. Census Bureau, Decennial Census; and

ND State Data Center at ND State University, Census 2000 Profiles, Fargo, ND.

The industries with the highest proportions of the work force in 2000 in the 26-county Lake Sakakawea area of influence were the same as in North Dakota as a whole: services; government; retail trade; and agriculture, forestry, fishing, hunting, and mining. For the entire area of influence, the proportion of the labor force in agriculture is noticeably larger and the proportion in manufacturing is noticeably smaller than in North Dakota as a whole. Within the area of influence, in 2000 the counties contiguous to the lake had nearly twice the proportion of workers employed in agriculture and about one-third more employed in transportation, warehousing, and utilities than did the non-contiguous counties. In contrast, the contiguous counties had a much lower proportion of workers in the service industries than did the non-contiguous counties, North Dakota, and the United States. As can be seen from table 2.18.6, services appeared to be the fastest-growing sector of the economy in both North Dakota and the United States between 1990 and 2000.

Census data on the number and average size of farms is consistent with the decrease in population of rural counties and the decrease in percent of workers employed in agriculture discussed earlier. The number of farms in North Dakota is decreasing, and their size is increasing. The total number of farms in North Dakota declined 13.2 percent from 35,289 in 1987 to 30,619 in 2002. Total farm acreage for North Dakota was 39.3 million acres in 2002 compared to 40.3 acres in 1987, declining only 2.6 percent during this period. In 2002, the 26-county Lake Sakakawea area of influence contained 15,291 farms (about half the farms in North Dakota) that included 21.9 million acres (about half the farm acreage in the State). The total value of agricultural products sold in North Dakota in 2002 was approximately \$3.23 billion. The 26 counties in the area of influence accounted for \$1.16 billion, or about 35.7 percent of the State's total value of production in 2002.

According to the Bureau of Labor Statistics, the 2004 unemployment rate was 5.5 percent nationally, but was only 3.4 percent in North Dakota. North Dakota's unemployment rate decreased from 3.2 percent in 1990 to 2.9 percent in 2000, but increased from 2000 to 2004. The average unemployment rate in 2004 in the Lake Sakakawea area of influence was 3.8 percent for all 26 counties, 4.2 percent for the contiguous counties, and 3.7 percent for the non-contiguous counties. This indicates a stable job market and nearly full employment for all persons participating in the job market (working or seeking work). Within the Fort Berthold reservation, however, the chronic unemployment rate (most of which is comprised of persons who have stopped actively seeking employment) is estimated to range from 62.5 percent to 80 percent (BIA 2006).

#### 2.18.6. INCOME

Overall, aggregate income for North Dakota was \$8.7 billion in 1999. Table 2.18.8 displays 1999 income data reported by the 2000 Census.

**Table 2.18.8. Income Data for Lake Sakakawea Area of Influence and North Dakota, 1999.**

Area	Median Household Income	Median Family Income	Per Capita Income
Contiguous Counties*	\$32,502	\$39,505	\$16,136
Non-Contiguous Counties*	\$35,243	\$43,825	\$17,674
All 26 Counties*	\$34,710	\$42,985	\$17,375
North Dakota	\$34,604	\$43,654	\$17,769

\*Area median income is based on county statistical data weighted by county population.

Sources: U.S. Census Bureau, Decennial Census; and

ND State Data Center at ND State University, Census 2000 Profiles, Fargo, ND.

North Dakota's per capita income in 1999 was only about 82 percent of the \$21,587 for the United States as a whole. The economy of North Dakota is still highly dependent on agriculture, so median income in North Dakota tends to vary with agricultural yields (which vary greatly with rainfall if not irrigated) and crop prices, which did not increase in the 1990s nearly as much as the cost of most other goods and services. The relatively low income levels in the contiguous counties in the Lake Sakakawea area of influence may be partly due to the higher proportion of agricultural workers in the contiguous counties compared to the non-contiguous counties or North Dakota as a whole. Because of their rural nature, most of the 26 counties in the area of influence had incomes lower than did North Dakota as a whole. The 2000 Census data for the 26 counties indicated that Burleigh County (which includes the city of Bismarck) and Mercer County (of which 65 percent of the population lives in the cities of Beulah and Hazen) were ranked as one of the top three counties in all three income categories.

### **2.18.7. ESTIMATED ECONOMIC VALUE TO NORTH DAKOTA OF LAKE SAKAKAWEA'S WALLEYE AND SALMON**

When average Lake Sakakawea surface elevations declined from 1830 feet msl in 2000-2002 to 1825 feet msl in 2003 due to drought conditions, catch rates of walleye and salmon were reduced. As a result, fewer anglers fished at the lake, and they had lower fishing-related expenditures in North Dakota. The economic losses were estimated by Shultz and Rosenberger (2004).

Based on NDGFD creel survey data collected at Lake Sakakawea, angler days were estimated to have declined from 269,468 to 254,360 (or 5.6 percent) for walleye and from 34,073 to 24,050 (or 29.0 percent) for salmon between 2000 and 2003 (Brooks and Hendrickson 2000, 2003). Fish caught per angler hour declined from 0.635 to 0.228 (or 64 percent) for walleye and from 0.015 to 0.010 (or 33 percent) for salmon. ND residents comprised about 88 percent of walleye anglers and about 93 percent of salmon anglers in both 2000 and 2003 (Brooks and Hendrickson 2000, 2003).

Expenditures of anglers at least 18 years old for open water fishing in the Missouri River system were derived from the 2001 NDGFD expenditure survey data collected from resident and non-resident fishing license holders. Two types of expenditures were estimated: variable expenditures such as travel, food, lodging, gasoline, rentals, guide services, and bait; and fixed expenditures such as boats and fishing equipment. Outliers (extremely high expenditures) were removed, so the estimates of expenditures are conservative. To obtain average daily expenditures representative of Lake Sakakawea anglers, daily expenditure data were averaged across individual zip codes, and these averages were weighted by the proportion of Lake Sakakawea anglers in the creel survey originating from each zip code. The resulting daily variable and fixed expenditures were \$41 and \$69, respectively, for residents and \$84 and \$35, respectively, for non-residents. Non-residents have higher variable expenditures per angler day because it usually costs them more to travel to Lake Sakakawea. In contrast, non-residents have lower fixed expenditures per angler day because non-residents make a smaller proportion of their fixed-expenditure purchases in ND than residents do.

The decline in both the salmon and walleye fishery between 2000 and 2003 resulted in fewer anglers at Lake Sakakawea, but many anglers fished at other sites in ND instead, so some economic losses to the Lake Sakakawea region were not economic losses to the State. Based on responses to the 2003 creel survey by Lake Sakakawea anglers (Brooks and Hendrickson 2003), Shultz and Rosenberger (2004) compiled data showing that if fishing for all species declined at Lake Sakakawea, a higher percentage of resident anglers would fish the same amount at Lake Sakakawea (59 versus 54 percent) or less at Lake Sakakawea, but nowhere else (18 versus 15 percent). Only 23 percent of residents would fish elsewhere (15 percent in ND and 8 percent outside ND), whereas 31 percent of non-residents would fish elsewhere (10 percent in ND and 21 percent outside ND).

Taking the daily expenditures and substitute sites in ND discussed above into account, Shultz and Rosenberger (2004) used a computer model to estimate economic losses to ND. They estimated that the 5-foot drop in average surface elevation of Lake Sakakawea

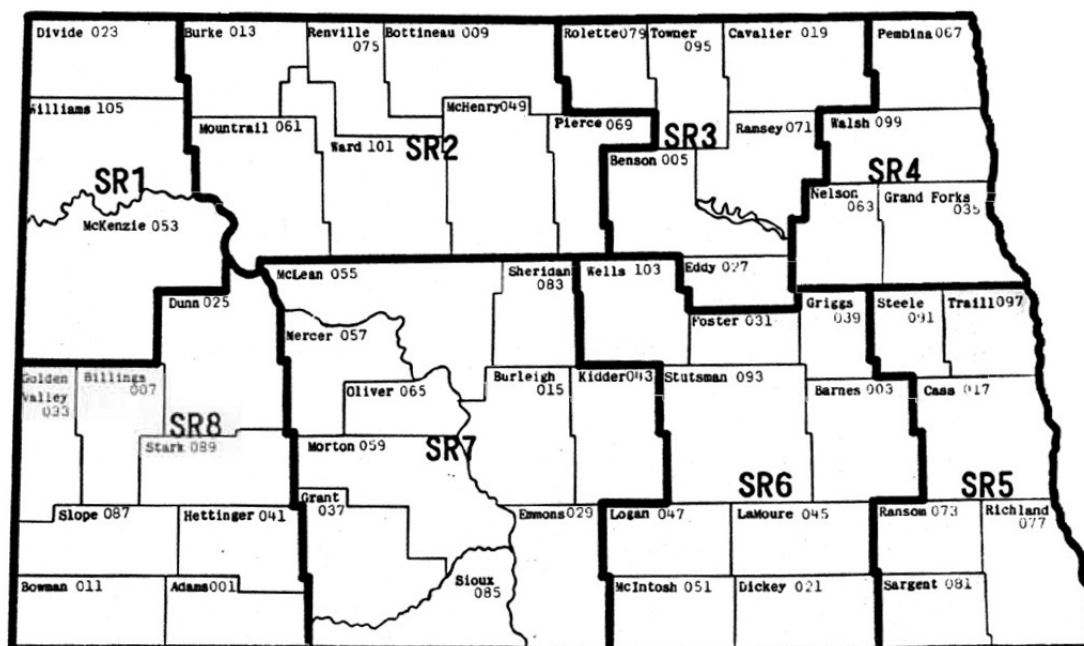
between 2002 and 2003 resulted in a net loss of 25,149 resident and non-resident walleye and salmon angler days at Lake Sakakawea. Because of substitution of other fishing sites in ND by many anglers, the net loss of walleye and salmon angler days in ND was only 21,074. The resulting economic losses to ND associated with reduced daily expenditures of walleye and salmon anglers in 2003 were estimated to be approximately \$933,000.

## 2.19. VISITATION AND RECREATION ACTIVITIES, FACILITIES, AND NEEDS

### 2.19.1. NORTH DAKOTA STATE PLANNING REGIONS

The State of North Dakota analyzes recreation facility supply, demand, and unmet needs in terms of the eight ND State Planning Regions (SPR's or SR's). The goals include: 1) identifying current and future recreational needs of the public in each SPR; and 2) meeting those needs through balancing facility supply and demand by efficient allocation of [monetary and human] resources (Baltezare and Leitch 1990). The Lake Sakakawea project is so large that it is located in four of the eight SPR's, each of which is comprised of a number of counties. Lake Sakakawea is located in the following SPR's and counties: SPR 1, Williams and McKenzie; SPR 2, Mountrail; SPR 7, McLean and Mercer; and SPR 8, Dunn. A map of the SPR's (SR's) in ND is provided as figure 2.19.1.

Figure 2.19.1. North Dakota State Planning Regions (SR's).



Source: James F. Baltezare and Jay A. Leitch, Projected Needs in Outdoor Recreation in North Dakota: 1990-2000, North Dakota State University, Fargo, ND, January 1990.

### 2.19.2. VISITATION

A visit is defined as the entry of one person into a recreation area or site to engage in one or more recreation activities. It does not measure amount of use or length of stay. If a

visitor leaves a site on the day he or she entered, and returns to a different site at the same project that day, it is recorded as a visit to both sites, but only one visit to the project.

Table 2.19.1 shows the annual visits recorded by the Corps at the Garrison Dam/ Lake Sakakawea project from Fiscal Year (FY) 1995 through FY 2006 using seasonal traffic counts and recreation criteria developed from surveys during the 1992-1995 time period. Visitation at recreation areas with traffic counters is presented by SPR. Two categories of visitation are estimated for the project as a whole: visits to game management areas; and dispersed use, which occurs at recreation areas without traffic counters, lakeshore areas adjacent to housing subdivisions, and other low-density recreation areas.

**Table 2.19.1. Garrison Dam/Lake Sakakawea Project Visits, Fiscal Years 1995-2006.**

<b>Fiscal Year</b>	<b>SPR 1 Rec. Areas (RAs)</b>	<b>SPR 2 RAs</b>	<b>SPR 7 RAs</b>	<b>SPR 8 RAs</b>	<b>Game Mgt.</b>	<b>Dispersed Use</b>	<b>Project Visits*</b>
1995	101,934	125,599	595,341	58,915	37,883	107,232	952,500
1996	103,018	133,669	587,025	55,603	37,883	107,232	954,500
1997	111,383	156,633	756,623	79,418	37,883	107,232	1,174,500
1998	124,417	142,267	704,943	79,294	37,883	107,232	1,118,800
1999	122,201	144,430	800,042	97,983	37,883	107,232	1,218,400
2000	119,636	141,271	849,321	90,217	32,869	107,232	1,249,300
2001	122,532	207,686	738,580	84,447	37,883	109,383	1,181,700
2002	114,779	231,718	796,966	78,121	45,495	111,719	1,291,300
2003	109,536	216,089	672,563	73,531	96,647	112,021	1,152,700
2004	94,682	181,779	658,252	71,537	98,207	112,111	1,099,200
2005	93,942	165,736	593,648	67,701	98,208	112,076	1,019,700
2006	71,897	183,146	659,740	71,335	98,234	112,050	1,082,000

\* Project visits are less than the total of visits to various recreation sites because some persons visited more than one recreation site at the project on the same day.

Total project visits were highest from 1997 through 2002 or 2003, after which visitation fell, due largely to the effects of drought on boat access to the lake, on access to receding shorelines, and on fishing success. Recreation areas in SPR 7 have the highest visitation; Lake Sakakawea recreation areas in SPR 7 are more numerous than in the other three SPR's combined and include two state parks and many intensive-use recreation areas near Garrison Dam. Except for SPR 1, which is located at the upper (shallower) end of the lake, visitation in FY 2006 (a drought year) was higher than in FY 1995 and FY 1996, which had average lake levels. This may be explained by: the many additional recreation facilities that were developed at Lake Sakakawea since 1996; some additional visitation to Lake Sakakawea in connection with a few Lewis and Clark Bicentennial events held in 2006; and the increased proportion of visitors who retired since 1996, resulting in their having more leisure time and therefore being able to visit the project more frequently than prior to their retirement.

The visits recorded by the Corps at each recreation area, grouped by SPR, for Fiscal Years 1995 through 2006 are presented in table 2.19.2.



**Table 2.19.2. Visits Per Year (x 1,000) at Lake Sakakawea Recreation Areas, 1995-2006.**

SITE NAME	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Dam / Powerhouse	9.0	7.8	10.7	9.0	9.0	7.2	4.9	3.2	3.2	3.0	2.7	1.1
Tailrace West	25.0	27.0	32.2	28.8	25.7	31.5	14.9	12.3	12.4	14.9	14.9	15.1
Spillway Overlook	21.3	21.3	114.2	19.7	16.9	25.4	20.4	21.2	21.9	23.1	23.1	23.5
Missouri R. Ramp	35.2	39.1	46.3	43.2	45.1	47.0	57.2	36.0	36.7	41.4	38.7	39.1
Downstream	49.7	53.1	62.4	63.6	59.2	60.7	74.3	86.5	50.1	40.0	46.3	44.8
Spillway Pond	12.5	10.7	10.0	11.0	15.4	7.8	6.9	14.0	13.0	11.4	13.3	7.0
Riverdale Overlook	11.2	9.1	10.3	8.7	5.6	8.5	5.8	5.5	5.6	5.1	5.2	5.8
Government Bay	24.0	21.1	33.9	34.8	29.3	28.0	29.6	26.6	27.7	28.3	24.7	24.1
Wolf Creek	21.8	23.2	25.1	25.1	25.7	36.3	26.9	22.9	24.6	19.3	17.8	18.5
East Totten Trail	46.7	45.8	48.2	48.1	49.1	42.9	43.3	58.1	56.0	51.7	51.1	51.6
West Totten Trail	8.0	8.2	9.7	9.1	8.2	9.6	10.2	5.1	3.0	2.1	1.9	2.2
Sportsmen's Centennial Park	22.2	23.8	23.2	27.4	23.5	21.0	17.7	24.8	21.8	22.6	16.9	15.5
Fort Stevenson SP	50.8	50.2	55.9	78.3	129.3	133.4	68.4	107.3	76.8	70.1	60.6	74.4
Douglas Creek	13.9	19.2	13.6	12.7	11.8	13.8	13.6	15.7	15.3	13.1	16.5	59.7
Indian Hills	18.3	16.8	18.6	18.0	18.9	24.3	19.4	23.0	20.0	19.6	19.9	19.7
Deepwater Creek	13.8	15.1	20.2	19.4	15.1	7.2	4.9	4.0	4.3	14.7	15.0	15.6
Twin Buttes	0.6	0.5	0.5	0.5	0.9	8.4	8.2	7.8	8.4	8.8	8.8	0.3
Beaver Creek Bay	17.7	13.7	16.7	19.6	20.8	22.2	20.9	36.9	17.2	15.4	11.8	14.9
Dakota Waters Resort/Lake Shore Park	25.0	21.8	33.5	41.4	37.5	30.9	56.0	45.9	38.8	41.3	37.0	36.1
Beulah Bay	28.4	23.3	22.7	29.7	32.4	37.4	53.6	38.1	40.5	48.1	54.4	56.6
Hazen Bay	18.0	16.1	13.4	14.4	20.5	21.0	27.0	36.2	33.1	18.4	23.7	24.2
Lake Sakakawea SP	102.6	111.3	122.8	134.1	190.1	213.7	152.2	164.4	142.0	146.0	89.3	110.1
Intake Picnic Area	19.7	8.6	12.6	8.4	10.1	11.2	2.3	1.6	na	na	na	na
SPR 7 SUBTOTAL	595.3	587.0	756.6	704.9	800.0	849.3	738.6	797.0	672.6	658.3	593.6	659.7
Parshall Bay	42.8	54.3	70.3	54.1	54.3	47.9	85.7	79.3	76.9	64.7	53.1	64.4
Van Hook Area	52.6	46.3	53.0	55.1	54.9	57.5	83.3	92.2	83.7	64.9	66.3	74.8
Pouch Point	7.8	9.7	10.5	10.2	10.3	8.2	10.6	14.8	16.1	13.7	16.6	10.7
Reunion Bay	na	na	na	na	na	5.2	5.0	7.8	5.9	5.0	4.0	4.4
New Town Marina	10.1	10.4	10.7	11.6	13.9	11.2	12.0	27.6	24.0	23.7	19.3	20.9
White Earth Bay	12.3	12.9	12.2	11.2	10.9	11.3	11.2	10.1	9.5	9.8	6.5	8.0
SPR 2 SUBTOTAL	125.6	133.7	156.6	142.3	144.4	141.3	207.7	231.7	216.1	181.8	165.7	183.1
Little Beaver Bay	2.2	2.1	2.6	2.4	1.3	1.4	1.5	3.6	3.6	3.6	2.6	3.8
Little Egypt	4.2	4.1	3.7	3.3	2.3	6.7	2.6	2.1	2.1	1.3	1.3	1.4
White Tail Bay (Lund's Landing)	10.2	11.7	10.1	8.8	8.1	9.9	11.1	10.4	9.3	7.1	5.5	5.6
Lewis & Clark SP	31.5	33.3	46.0	62.3	61.6	56.0	46.0	38.2	32.2	25.2	24.0	15.9
Little Muddy	6.9	8.0	6.1	5.0	4.8	4.6	7.8	6.9	7.1	7.3	13.1	11.7
Lake Trenton	22.5	14.0	12.0	12.3	20.6	19.7	20.9	21.2	24.9	23.4	24.9	21.6
Amer. Legion Park	9.0	12.5	10.0	8.3	5.0	4.5	4.7	4.5	5.1	4.9	4.4	4.4
Tobacco Garden	14.9	16.8	20.5	21.7	18.5	16.7	28.0	27.8	25.3	21.9	18.1	7.6
Bear Den Creek	0.6	0.5	0.5	0.4	na	na	na	na	na	na	na	na
SPR 1 SUBTOTAL	101.9	103.0	111.4	124.4	122.2	119.6	122.5	114.8	109.5	94.7	93.9	71.9
Skunk Creek	na	na	na	na	na	na	na	3.7	7.1	17.7	16.0	16.1
McKenzie Bay	12.2	12.9	28.1	28.5	31.5	34.4	37.9	38.2	39.3	28.9	25.0	28.9
Lost Bridge	1.0	1.0	1.0	0.2	na	na	na	na	na	na	na	na
Little Missouri	31.4	26.4	34.4	33.7	38.1	29.8	19.3	8.0	2.6	1.1	0.0	0.0
Charging Eagle	14.2	15.3	16.0	16.9	28.3	26.1	27.2	28.2	24.5	23.8	26.7	26.4
SPR 8 SUBTOTAL	58.9	55.6	79.4	79.3	98.0	90.2	84.4	78.1	73.5	71.5	67.7	71.3

### 2.19.3. VISITOR DISTRIBUTION

A survey of visitor origins and destinations was conducted by the Corps in 1992 (USACE 1993). This survey identified the county and state of residence of parties visiting intensive-use recreation areas at Lake Sakakawea. Table 2.19.3 provides the survey results.

**Table 2.19.3. Lake Sakakawea Visitor Origins and Destinations, by State Planning Region (SPR), based on Data from a U.S. Army Corps of Engineers' Survey in 1992.**

Surveyed Rec. Area Location	Residence of Visiting Party (no.)	Residence of Visiting Party (%)	Location of Rec. Area Visited (no.)	Rec. Areas in SPR with Visit Record	Rec. Areas in SPR (% of All Visits 1995-2006)
SPR 1	11	5.5 %	8	9	10.2 %
SPR 2	46	23.0 %	11	6	16.1 %
SPR 7	95	47.5 %	181	23	66.5 %
SPR 8	6	3.0 %	0*	5	7.2 %
Other ND	20	10.0 %	----	----	-----
Non-ND	22	11.0 %	----	----	-----
TOTAL	200	100.0 %	200	43	100.0 %

\*No areas in SPR 8 were included in the 1992 survey results. Source: USACE 1993.

Based on the data in table 2.19.3, an estimated 79 percent of visiting parties to developed recreation areas at Lake Sakakawea resided in one of the SPR's contiguous to the lake, and the remaining 21 percent was split about evenly between those residing in other parts of ND and those residing outside of ND. The four SPR's contiguous to the lake had the same ranking for visitor origins (permanent residence) as well as destinations, although many SPR 2 residents, and 40 of 42 visitors residing outside the four SPR's (USACE 1993; data not shown) visited recreation areas in SPR 7. The popularity of SPR 7 recreation areas was understandable, considering that SPR 7 contains: 1) over half the recreation areas for which visitation is recorded; 2) two of the three State Parks at Lake Sakakawea; and 3) more residents than any of the other three SPR's (U.S. Census Bureau 2000). As can be seen from the development needs listed for each recreation area in Chapter 7, many recreation areas in a variety of locations around Lake Sakakawea plan to expand facilities over the next 20 years to meet visitor demands and avoid overcrowding.

### 2.19.4. CARRYING CAPACITY

Carrying capacity is a concept that denotes the limit of use for some particular purpose. A pasture will "carry" only a limited number of animals for a given time without suffering damage sufficient to reduce future capacity. (In fact, the timing of grazing and number of animals allowed to graze is regulated in grazing leases at Lake Sakakawea to prevent the carrying capacity from being exceeded.) Similarly, the recreational carrying capacity of an area is thought of in two ways, as "resource" capacity and as "social" capacity.

Resource capacity is the level of use beyond which irreversible biological deterioration takes place or degradation of the resource makes it unsuitable or unattractive for

recreational use. Resource capacity is usually a seasonal or long-term issue, as most areas will tolerate some short-term overuse without significant adverse effects. The resource capacity at Lake Sakakawea is typically controlled by factors such as the presence of nesting sites, highly erodible soils, or steep terrain. Resource capacity must be accommodated in the design and location of facilities, as well as the regulation of use. Areas with low resource capacity are classified as Environmentally Sensitive Areas or one of the Multiple Resource Management sub-classifications. In these land classifications, the area covered by developed recreation facilities compared to the total area of the management unit is typically much lower than the ratio for the area covered by existing and planned future developed recreation facilities in management areas with a land classification of Recreation.

Social capacity is the level of density beyond which the user does not achieve a reasonable level of satisfaction. For example, the social capacity of a given area is typically much greater for a swimming beach than a golf course. The social capacity is most frequently limited by the level of recreational facility development, such as parking spaces and restrooms, or by the expectations of the different recreational users. The density of the existing facilities at Lake Sakakawea is generally appropriate for the region, and social capacity limits are rarely reached. Areas with higher social capacity and accessibility ordinarily have a land classification of Recreation.

Implementation of recreation development included in each management area's development needs in Chapter 7 will enable land managers and recreation facility operators to balance facility supply and recreation demand. Balancing supply and demand avoids the potential for exceeding both the resource capacity (for example, trails/roads, fencing, and signage to reduce trampling of vegetation by pedestrians or vehicles) and the social capacity (for example, expanding facilities that are often used to capacity where future growth in visitation is expected).

#### **2.19.5. RECREATION ACTIVITIES AND ACTIVITY MIX**

The following table provides the activity mix at the Garrison Dam/Lake Sakakawea project since 1995. During most of those years, lake levels were not abnormally low. For each activity, both the percent of visits in which that activity was participated in and that activity's percentage of all activities are shown. The total percent of all activities divided by the total percent of visits (100 percent) shows that on average, approximately 1.8 activities were engaged in during a visit to the Lake Sakakawea project.

Table 2.19.4 indicates that slightly over half of the visitors to Lake Sakakawea participated in water-based recreation, and the remainder participated in land-based, outdoor recreation activities that are enhanced by the proximity of the lake.

**Table 2.19.4. Activity mix for an activity's percent of all activities and percent of visitors engaging in each activity, based on Corps 1995-2006 visitation data at Lake Sakakawea.**

<b>Rcreation Activity</b>	<b>Percent of All Activities</b>	<b>Percent of Visits</b>
Camping	19.50	10.81
Picnicking	11.74	6.50
Boating	39.73	22.01
Fishing	41.74	23.12
Hunting	3.50	1.94
Waterskiing	2.38	1.32
Swimming	8.74	4.84
Winter Activities	0.0006	0.0004
Other (Jet-skiing, Hiking, Playground, Bird Watching, Pow Wows, etc.)	22.09	12.24
Sightseeing only (no other recreation activity)	31.07	17.21
Total Percent	180.5	100.0
Activities Per Visit	1.8	

The Lake Sakakawea region has an abundance of natural and scenic resources that make resource-based outdoor recreation activities, such as hunting and fishing, possible and add to the enjoyment of other outdoor recreation activities. Game and fisheries management by the Corps and NDGFD strives for a balance between use and protection of these resources.

Fishing is the most popular activity at the Garrison Dam/Lake Sakakawea project. Anglers participate in ice fishing, shoreline fishing, boat fishing, and darkhouse spearing and take advantage of the cold-water (salmon), cool-water (especially walleye), warm-water, and riverine fishery opportunities. Fishing activities are described in more detail in section 2.19.8 and in the Fish and Wildlife section of Chapter 2. Fishing tournaments are held at a number of recreation areas; information on existing tournaments and facility development needs for existing and newly proposed tournaments is provided in the Chapter 7 section on each recreation area where fishing tournaments are held and/or are proposed.

The Lake Sakakawea area is an important regional resource for hunting. North Dakota is fifth-highest among the 50 states in regard to hunting participation rate (USFWS and U.S. Census Bureau 2002). Although only 3.5 percent of the persons visiting intensive-use recreation areas hunted, visitation data in table 1 indicate that during the 1995-2006 time period, about 5 percent of project visitation occurred at game management areas, where hunting is the major activity; this rose to about 10 percent during the 2002-2006 time period. The primary big game species hunted is white-tailed deer. The Lake Sakakawea project has excellent waterfowl hunting because of its location in the Central Flyway, the migration route for thousands of geese and ducks (as well as shorebirds) between Canada and wintering areas on the Gulf Coast and farther south. Hunting of wild turkeys, ring-

necked pheasant, and other upland game birds is also very popular. More information regarding hunting trends in the state for various species is provided in the Fish and Wildlife section of Chapter 2, and information on specific game species hunted (if any) is provided for each management area in Chapter 7.

Boating activities are also resource-oriented, as they depend on water. Table 2.19.4 shows that boating is the second-most popular activity at the Garrison Dam/Lake Sakakawea project. With the excellent fishery at the project, much of the boating is related to fishing activities, but much is motor boating, some is sailboating, and a small percent is waterskiing. Wind surfing, tubing, and jet skiing are also popular water-oriented activities but are included under “Other” activities in the activity mix.

Camping is a popular activity at Lake Sakakawea. As a high resource-oriented activity, primitive camping takes place most often in areas where there are large expanses of open land. Most of the primitive camping at Lake Sakakawea is associated with hunting and fishing trips, but many individuals seek a primitive camping experience to enjoy solitude and nature. Primitive camping occurs at a variety of areas at Lake Sakakawea, from primitive camping loops of developed campgrounds to areas that may contain at most a vault toilet. Highly developed campgrounds are used as destination areas. On summer weekends, especially holiday weekends, these campgrounds are often near capacity. Developed camping facilities are also abundant at Lake Sakakawea. There is a demand for improved or upgraded facilities (especially electrical hookups) as well as additional camping facilities, including camping cabins and recreational vehicle (RV) camping areas. Existing camping facilities and development needs related to camping are provided for each management area in Chapter 7.

Picnicking is popular at Lake Sakakawea and is usually combined with other activities. Picnic shelters with tables and either grills or fire rings are available at most recreation areas at Lake Sakakawea. A number of recreation areas have development needs listed in Chapter 7 that relate to picnicking, such as installing a group picnic shelter or adding or upgrading playground equipment.

Trail use has become increasingly popular. Trail activities include walking, hiking, jogging, bird watching, mountain biking, nature observation, and nature education / interpretation. Most of the trails at Lake Sakakawea were constructed after 2000. Trails were the top priority recreation need identified by both the four SPR’s adjacent to Lake Sakakawea and throughout the state in the 2003-2008 SCORP (NDPRD 2003). Information on existing trail facilities and development needs for new trails and trail improvements are provided for recreation areas in Chapter 7.

Swimming is a popular activity. Designated swimming areas at recreation areas are marked with buoys, and water quality is monitored regularly to ensure public health and safety. In other areas around Lake Sakakawea, many visitors swim and sunbathe along the shoreline in undesignated locations at their own risk.

Members of the Three Affiliated Tribes regularly hold pow wows and other recreation-related activities that help to build community social cohesion. Some of the pow wows are held on Corps public lands at areas leased by the Three Affiliated Tribes. Many people attending pow wows (on or off Corps public lands) also use facilities at nearby recreation areas located on Corps public lands.

The peace, solitude, and beauty of the surrounding area make the Lake Sakakawea project attractive to sightseers. In addition, photographers often take advantage of the many wildlife species, the variety of vegetation associations, and memorable scenes relating to recreation activities (including game harvested and fish caught). Sightseeing may well be the most popular activity at Lake Sakakawea, as the only visitors who are recorded as sightseeing are those who did not participate in any other outdoor recreation activity.

#### **2.19.6. PROJECTION OF GENERAL TRENDS IN VISITATION**

Table 2.19.4 shows fishing, boating/waterskiing, and camping are the most popular activities at Lake Sakakawea. Visitation trends at the lake are expected to be similar to the annual days of participation in these three activities in SPR 1, 2, 7, and 8. Projections of: 1) participation rates and annual days of participation in 1990; 2) total days of participation occurring in each SPR in 1990 and 2000; and 3) total days of participation by residents of each SPR in 1990 and 2000 were taken from Baltezore and Leitch (1990). Baltezore and Leitch (1990) aggregated recreation activity participation data from mail surveys by variables such as sex and age (under 20, 20-44, 45-64, and 65 or over); then they forecasted days spent on each activity in each SPR and by residents of each SPR in 1990, 1995, and 2000 based on demographic projections. Corps staff used 2020 population projections by the ND State Data Center for counties in the four SPR's, unless otherwise indicated, to extend the 2000 activity projections of Baltezore and Leitch (1990) to 2020. The results are displayed in table 2.19.5.

**Table 2.19.5. Trends in Major Spring / Summer Recreation Activities in SPR's adjacent to Lake Sakakawea Based on County Population Projections and 1990 Participation Rates.**

ITEM	SPR 1	SPR 2	SPR 7	SPR 8	TOTAL
2000 population*	27,781	88,089	130,418	38,365	284,653
2020 pop. projection**	26,918	89,372^	148,273^	38,862^	303,425
2020:2000 ratio	0.969	1.015	1.137	1.013	1.066
<b>BOAT / WATERSKI:</b>					
Participation, 1990^^	46 %	31 %	34 %	30 %	
Average no. days/yr. per participant, 1990^^	6 days	10 days	9 days	5 days	
Activity days in SPR projected for 2000^^	165,551	356,222	647,178	145,185	1,314,136
Activity days by SPR residents projected 2000^^	117,870	343,292	592,294	81,850	1,135,306
<b>FISHING:</b>					
Participation, 1990^^	46 %	42 %	57 %	47 %	
Average no. days/yr. per participant, 1990^^	11 days	14 days	11 days	8 days	
Activity days in SPR projected for 2000^^	293,883	602,302	1,233,954	206,955	2,337,094
Activity days by SPR residents projected 2000^^	221,644	537,399	1,212,521	201,536	2,173,100
<b>CAMPING:</b>					
Participation, 1990^^	46 %	31 %	40 %	39 %	
Average no. days/yr. per participant, 1990^^	6 days	12 days	9 days	6 days	
Activity days in SPR projected for 2000^^	191,946	327,638	740,565	227,104	1,487,253
Activity days by SPR residents projected 2000^^	111,952	367,454	659,912	141,914	1,281,232
<b>TOTALS, 2000 &amp; 2020:</b>					
Total estimated activity days in SPR for 2000	651,380	1,286,162	2,621,697	579,244	5,138,483
Total estimated activity days/SPR residents 2000	451,466	1,248,145	2,464,727	425,300	4,589,638
Total estimated activity days in SPR for 2020	694,337	1,370,980	2,794,590	617,443	5,477,350
Total estimated activity days/SPR residents 2020	437,441	1,266,324	2,802,163	430,810	4,936,738

\* Source: U.S. Census Bureau, 2000 Decennial Census.

\*\* Assumes no population decrease between 2000 and 2020 for the six counties contiguous to the lake, due to expected increase in number of homes near the project boundary.

^ The projected 2020 population for urban areas in local DOT reports was combined with the 2000 population in the non-urban areas of Ward, Burleigh, and Stark counties.

^^ Source: Baltezare and Leitch, 1990.

Table 2.19.5 shows that the estimated activity days in each of the four SPR's for boating/waterskiing, fishing, and camping combined are expected to increase between 2000 and 2020; this was also the case between 1990 and 2000 (Baltezore and Leitch 1990; data not shown). Except for SPR 1, where population is projected to decrease slightly, the estimated days of participation in all three activities combined by residents of the SPR are expected to increase between 2000 and 2020. Table 2.19.5 shows that for each of the four SPR's, the activity days for the three activities combined that were projected to occur in the SPR were greater than the activity days for the SPR residents (some of which may occur inside and some outside of the SPR in which they reside) in 2000. With the exception of SPR 7, which has the highest projected population increase, the same is true for 2020. These data demonstrate a net influx of recreating visitors to the four SPR's adjacent to Lake Sakakawea. The data also indicate that additional facilities are needed to meet visitor demands at Lake Sakakawea recreation areas in all four SPR's, even in SPR 7, which tables 2.19.1 and 2.19.2 show already accommodates more visitors to Lake Sakakawea than all recreation areas in the three other SPR's combined.

#### **2.19.7. IDENTIFICATION OF PRIORITY RECREATION FACILITY NEEDS**

Facility needs were identified by the ND Parks and Recreation Department (NDPRD) in the North Dakota 2003-2008 State Comprehensive Outdoor Recreation Plan (SCORP) through the use of eight public forums (one for each SPR) that included recreation agency representatives and members of the general public. The public forum in each SPR identified the recreation needs in that SPR and rated these recreation needs by priority (NDPRD 2003). Different SPR's had different numbers of facilities on their priority lists. For this Master Plan/EA, Corps staff calculated priorities across the four SPR's. Each SPR's top priority was assigned a value of 1, and each priority going down the list was assigned a value that equaled the value assigned to the priority above it, minus (1 divided by the number of listed facilities). For example, if the list had 10 priority facilities, the facility with the second-highest priority was given a value of 1 minus 1/10,  $= 1 - 0.1, = 0.9$ . The results are provided in table 2.19.6. The overall ND recreational priorities were based on all eight SPR's and were listed in the 2003-2008 SCORP.



**Table 2.19.6. Priority Recreation Needs for SPR's near Lake Sakakawea and for North Dakota.**

RECREATIONAL PRIORITIES	SPR 1 Rank	SPR 2 Rank	SPR 7 Rank	SPR 8 Rank	Total, 4 Values	Rank, 4 SPR's	Rank, All ND
Trails	4	2	1	5	3.038	1	1
Golf Courses	1	5	4	4	2.823	2	5
Sports Courts	2	3	3	7	2.741	3	2
Pools/Beaches	5	1	11	2	2.480	4	4
Playgrounds / Picnic Areas	6	4	2	8	2.078	5	3
Sports Fields		7	8	1	1.506	6	6
Water Access	8	6	7		0.865	7	
Historic Sites				3	0.778	8	9
Theme Parks	3				0.750	9	
Passive Recreation			5		0.636	10	
Renovate Existing Facilities			6		0.545	11	
Support Facilities				6	0.444	12	8
Pet Parks			9		0.273	13	
Campgrounds	7				0.250	14	7
Community Gardens			10		0.182	15	
Amphitheaters				9	0.111	16	

Source: NDPRD, 2003-2008 ND State Comprehensive Outdoor Recreation Plan.

It can be seen from table 2.19.6 that the top six priority recreation needs in the four SPR's adjacent to Lake Sakakawea were also in the top six priority recreation needs for ND as a whole. Development needs listed for recreation areas in Chapter 7 include all the facilities identified as priority needs by the four SPR's except theme parks, pet parks, and community gardens.

#### **2.19.8. FISHING AND BOATING ACTIVITIES AND NEEDS AT LAKE SAKAKAWEA**

Most fishing at Lake Sakakawea is done by boat or from shore. The hook-and-line fishing season runs year-round, from April 1 to the following March 31 on Lake Sakakawea, unless otherwise posted. The cool-water fishery for walleye and cold-water fishery for Chinook salmon are outstanding at Lake Sakakawea if lake levels are not abnormally low. Ice fishing is popular in certain areas of Lake Sakakawea; ice fishing is the only type of fishing allowed at the Audubon National Wildlife Refuge (from ice-up around December 1 through March 31 of each fishing year). Darkhouse spear fishing for northern pike and non-game fish occurs between December 1 and the last day of February; it can be conducted from Garrison Dam upstream to the U.S. Highway 85 bridge at Williston and on all tributaries to the lake up to the first vehicular crossing (NDGFD 2005c). Estimates of shore fishing and total fishing efforts obtained through creel surveys conducted by the NDGFD from 1994 to 2004 are provided in table 2.19.7.

**Table 2.19.7. Trends in Shore Fishing and Total Fishing at Lake Sakakawea, 1994-2004.**

<b>Year</b>	<b>Survey Dates</b>	<b>Shore Fishing Effort (Hours)</b>	<b>% Shore Effort in Lower Reservoir</b>	<b>% Shore Effort in Mid-Reservoir</b>	<b>% Shore Effort in Upper Reservoir</b>	<b>Total Fishing Effort (Hours)</b>	<b>Shore % of Total Effort</b>
1994	May 1-Sep 30	355,843	36 %	14 %	50 %	1,452,420	24.5%
1997	May 1-Sep 30	211,769	43 %	11 %	46 %	1,393,703	15.2 %
2000	May 1-Oct 14	72,093	49 %	12 %	39 %	1,441,860	5.0 %
2003	May 1-Oct 15	97,954	41 %	25 %	34 %	1,323,703	7.4 %
2004	May 15-Sep 15	10,976	31 %	25 %	44 %	645,647	1.7 %
1994-1997	May 1-Sep 30	283,806	38.6 %	12.9 %	48.5 %	1,429,753	19.9 %
2000-2004	May 1-Oct 15	60,341	43.6 %	19.8 %	36.6 %	1,137,070	5.3 %

Sources: Brooks and Hendrickson 2000, 2004a, and 2004b; Brooks et al. 1995; and Spawn et al. 1998.

Relatively low lake levels due to the drought resulted in a drop of over 50 percent in total hours of fishing effort (which mainly consisted of boat fishing) between 2003 and 2004. The low lake levels resulted in many boat ramps being non-functional; some boat ramps were able to be extended, but other ramps could not be extended and remained non functional while lake levels were low. In some cases, a low-water ramp and a vehicular access route to the ramp was relocated within the immediate area of former access points. However, in other areas boat anglers and pleasure boaters/waterskiers needed to travel many more miles (sometimes over minimally maintained roads) to gain access to a functional ramp. To improve this situation, the development needs at many recreation areas in Chapter 7, Resource Plan, include extending the existing boat ramp and/or installing a new low-water boat ramp with access road and parking.

As shown in table 2.19.7, fluctuations in lake levels have affected shoreline fishing even more than boat fishing. In 1997, high water levels made shoreline access difficult, and shore fishing hours fell to 60 percent of the 1994 hours. During the 2000-2004 period, as lake levels decreased and the shoreline receded, the difficulty anglers experienced in accessing the shoreline resulted in a decrease in shore fishing hours to approximately 17 percent of 1994 hours. Receding shorelines were often separated from parking areas by long distances, and shore anglers often had to walk over muddy substrates that were previously on the lake bottom. In March 2005, the Corps identified specific pedestrian and vehicular shoreline access points based on the Shoreline Access Policy and Shoreline Management Plan and listed these access points on the Corps' Web site. Shorelines at these listed areas were accessible by street-legal motorized vehicles along a designated pathway (usually a boat ramp or low-water ramp). The access routes at these listed areas

had substrates that supported vehicles; did not have an overly steep slope; and would not result in adverse effects on cultural resource sites or threatened and endangered species. To increase appropriate shoreline access at Lake Sakakawea, almost all of the management units in Chapter 7, Resource Plan, have a development need related to improving shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan.

In addition to anglers' needs for increased boat ramp access and better shoreline accessibility, additional and/or improved fish cleaning stations are needed by both boat and shore anglers. New and upgraded fish cleaning facilities are frequently listed among the development needs at recreation areas in Chapter 7.

During times of low lake levels, marinas were unable to accommodate many motorboats and/or keeled sailing craft. Site-specific development needs to increase functionality of boat ramps and docks and/or to provide for increased watercraft capacity and marina services in the future, when lake levels and boating visitation demands are high, are proposed in Chapter 7 for nearly all recreation areas that have boat ramps. Information that needs to be considered during the process of marina-related development is presented in section 2.19.10.

#### **2.19.9. FACILITIES AND FACILITY NEEDS AT PUBLIC RECREATION AREAS**

Existing facilities at public recreation areas, proposed new facilities, and facilities proposed to be upgraded and/or increased in number during 2007-2027 are summarized in table 2.19.8 and detailed in Chapter 7. Golf courses and recreation areas leased by quasi-public entities such as sportsmen's clubs and youth camps are not provided in table 2.19.8, but existing facilities and development needs of all areas are detailed in Chapter 7.

**Table 2.19.8. Existing and Proposed Facilities at Public Lake Sakakawea Recreation Areas.**

Recreation Area	Boat Fuel	Boat Dock	Boat Ramp	Drinking Water	Camping	Camp Pads	Elec. Hook Ups	Showers	Restroom Flush	Restroom Vault	Picnic Shelter	Picnic Tables/Grills	Trail	Beach/Bathhouse	Road/Parking Area	Playground	Concession	Cabin Rental	Boat Rental	Boat Storage	Sanitary Dump Sta	Fish Cleaning Stat.	Fishing Pier
Spillway Overlook																							
Tailrace / Tailwaters		E	E							E												E	N
Downstream Campground				E	E	I	I	E	I	E		E				E					E		
Spillway Pond			I	E						I	E	E				E							N
Riverdale Overlook										E	E				E								
Government Bay		E	I							E					I								
Wolf Creek		E	I	I	E		N		N	I	E	E			E	E					E	E	
East Totten Trail		E	I	I	E	I	I		N	E		E	E		I	N					E	E	
West Totten Trail		E	E							E					E								
Sportsmen's Centennial Park		I	I	E	I		I	E	I	I	E	I	I		E	E	E					I	
Ft. Stevenson State Park	I	I	I	E	I	I	I	E	E	E	E	E	I	E	I	E	E	I	E	I	E	E	N
Douglas Creek		E	I	E	E		N		N	I		E			E								
Indian Hills	E	E	I	E	E	E	E	E	E	E		E	I		I		I	I	E	E	E	E	
Deepwater Creek		E	I	E	E	N	N		N	I	E	E			I								
Arrowhead Resort		N	N	N		N	N		N		N	N			N		N					N	
Parshall Bay	E	I	I	E	E	E	I	E	E	I	E	E			E	E	E	I	E		E	E	
Van Hook	E	I	I	E	E	E	E	E	E	I	E	E			E	E	E	N			E	E	
Pouch Point		E	E	E	E		I	I	E	E	E	E			E	N	I	N				N	
New Town	E	E	I	E	E	I	E	E	E	E	I	E			I	I	I	N		E	E	I	
Sanish Bay (Aftem's)	N	I	I	N	N	N	N	N	N	N	N	N	N	N	N	I	N	N	N	N	N	N	N
White Earth Bay	E	E	E	E	N	E				I	I	I			I		I			N	E	E	
Little Beaver Bay		E	I	N	I	N	N		N	I	I	I	N	N	I	N	N				N	N	N
Little Egypt					E					E	E	E			E								
White Tail Bay/Lund's Landing	I	I	I	E	I		N	N	N	E	E	E	E		I		I	N	E		N	N	
Lewis & Clark State Park	I	I	I	E	I	I	I	E	I	E	I	I	I	E	E	E	I	I	E	E	E	E	
Cut Bluff Expedition Overlook					E						I	I	I										
Little Muddy		N	E							E	E	E	E		E								
Lake Trenton		I	I	I	I	I	I	E	I	I	E	I		I	I	E	I	N			E	E	N
American Legion Park			E	E	E	E	E			E	E	E			E								
Tobacco Gardens	E	E	E	E	E		I	E		E	E	E			I	E	I	I			E	E	
Four Bears	I	I	I	E	E				E						I		E		N		E	E	
Skunk Creek		I	E	N	E		E		N	E					I			E				I	
McKenzie Bay	I	E	I	E	I		I		E	I	E	E	N		I	E	E	E	E		E	E	
Lost Bridge									N	E	I				N		N						
Little Missouri Bay			I		N					I					E								
Charging Eagle		I	I		I	N	N			I	N	I	N		I	N		N				N	
Red Butte Bay			I												N								
Twin Buttes						I	E			I	E	I			E								
Beaver Creek Bay		E	E		E	N	N			I	E	E			E								
Lake Shore Park/Dakota Waters	I	I	I	E	E	I	I	I	I	I	I	E			I	I	I	I		E	E	E	
Beulah Bay		E	I	I	E	E	E	E	E	E	E	E			E	I		E			E	E	
Hazen Bay / Walleye Bay	N	I	I	E	E	E	E	E	E	E	I	I	N		I		I	E		E	E		
Lake Sakakawea State Park	E	E	E	I	E	E	I	E	I	I	I	E	I	E	E	E	I	I	E	E	I	E	N

E = Existing facilities; N = New facilities proposed for development by 2027; and  
I = Existing facilities proposed to be increased in amount and/or upgraded by 2027.

## 2.19.10 MARINA DEVELOPMENT GUIDELINES

The U.S. Army Corps of Engineers (Corps) regulates or permits marina activities. Under Section 10 of the Rivers and Harbor Act of 1899, the Corps regulates all activities that could directly affect the navigability of rivers and coastal waters used for interstate commerce. In addition the Corps is responsible for regulating the discharge of dredged or fill material in the nation's waters under Section 404 of the Clean Water Act.

The successful development of a modern marina requires knowledge of a wide range of professional and practical disciplines. The scope of these disciplines includes but is not limited to: site selection, influences of climate, environmental effects, regulatory constraints, operational and maintenance procedures, and financial issues. The following general characteristics should be considered while planning, designing, and developing marinas and marina-related facilities to maximize the potential for their sustainability.

Environmental Aspects. Consider environmental effects of marina facility development in a manner that reduces potential adverse impacts and enhances beneficial values of natural resources.

- 1) Ensure marinas and boating activities minimize changes to the natural landscape.
  - Avoid impacts to cultural and historic sites by authorizing all work through the Garrison Project Office prior to any activity, coordination with State Historical Preservation Office may be necessary.
  - Avoid or minimize effects on wetlands, riparian habitat, native aquatic vegetation, other aquatic habitat, and habitat areas designated as important by federal, tribal, state, or local governments.
  - Identify habitats that are currently used, or have the potential to be used, by species that are Federally Listed, are in the Natural Heritage Program, and/or are State species of conservation priority; and avoid or minimize impacts to these habitats.
  - Reduce potential impacts of marina visitors on natural and cultural resources by designating anchorages and landing points with managed trails.
- 2) Plan marina locations and facilities so that operations are compatible with existing federal, tribal, state, and local environmental laws and regulations.
  - Assess water quality as part of the decision-making process regarding marina location and design.
  - Avoid sewer discharges and other non-marina contamination sources in marina siting.
  - Ensure that water circulation and flushing should be adequate to keep marina waters fresh.

Protection. Protection against strong winds, wind-driven waves, boat wakes, and ice damage is essential to the success of a marina. This protection reduces potential risk to personal safety as well as potential risk of property damage.

- 1) Select a location that offers natural protection from the elements.
  - Assess frequency, intensity, and direction of storm winds, waves, and littoral currents.
  - Use this data to focus marina site selection on naturally protected bays, if available.
- 2) Provide protection by developing an effective artificial breakwater.
  - Design and construct the breakwater using appropriate materials, proper sizing, and optimal orientation.
  - Ensure breakwater location and design effective protection for marina facilities, operations, and safety of patrons.

3) Reduce risk of flood damages to facilities by complying with Northwestern Division Regulation (NWDR) 1110-2-5 regarding location of cuts and fills and siting various types of structures above certain elevations (available at the Garrison Project Office).

Accessibility. Access roads, water basin depth, and onshore and offshore marina facilities must be adequate to support the number and size of boats, boat trailers, other watercraft, and other vehicles using the marina facilities.

- 1) Ensure that roads, ramp turnarounds, and parking adequately support projected use.
  - Identify the percent of boats expected to be arriving by water or overland on trailers.
  - Construct or improve the access road if needed to enable it to support the anticipated level of road traffic.
  - Assess soil characteristics at boat ramps and turnaround areas to ensure soil stability.
  - Design ramps, ramp turnarounds, and docks to be able to accommodate maneuvering of the largest-size boat and boat trailer expected, including length and width of lanes and transition areas for extremely long ramps.
  - Provide parking areas that are adequate for the most vehicles and trailers that would be expected to occur simultaneously during peak visitation.
- 2) Ensure that water depths at boat ramps, slips, and the harbor/embayment are adequate to accommodate the deepest draft vessels expected (with added depth for a margin of safety) and maintain functionality of facilities at the lowest expected lake elevations.
  - Research historical and projected lake elevations.
  - Obtain bathymetry data to identify potential marina sites with adequate depths to accommodate boats with the largest draft expected.
  - Select appropriate dredge material disposal options and/or sites if dredging is needed.
  - Identify sedimentation patterns that may require maintenance dredging and take these into account in designing and siting ramps and slips and in maintenance plans.
  - Design and site boat ramps to accommodate extensions if needed during times of very low lake elevations.
  - Install adjustable courtesy docks that can be operated, maintained, and accessed easily by boats at varying lake elevations.

Economic Feasibility. All marinas must get a good financial return on investment costs within a reasonable time to be successful. Long-term recreation trends, market demands for marina facilities, and construction, operation and maintenance costs (including costs to comply with all governmental laws and regulations) should be considered.

1) Prepare a market study to comply with U.S. Army Corps of Engineers Memorandum, Subject: Recreation Development Policy for Outgranted Corps Land, December 6, 2005, available at the Garrison Project Office. The following factors should be considered.

- Compare the existing marina facilities and services (the supply) with market demand.
  - Identify the range of services expected by boaters, for example dry storage, sanitation facilities, and fish cleaning facilities, and any existing unmet needs for these services.
  - Forecast future demands for various types of marina services, based on projected markets for different boats and sizes; trends in population, visitation, and activities; and expressed public desires. (See details in the December 6, 2005 Memorandum.)
  - Identify areas where marinas or particular types of marina services (such as boat fueling, bait sales, restaurant, and repair services) are inadequate to meet demands.
- 2) Consistent with information in the market study, prepare a feasibility study that estimates the stream of revenues and expenditures to demonstrate financial feasibility. (See the detailed requirements in the December 6, 2005 Memorandum.) Consider the following factors to obtain better estimates, increase revenue, and reduce costs.

- Construct marina facilities in phases to reduce the amount of financing needed at any one time, to keep supply from outpacing demand that is increasing slowly, and for increased ability to respond to unforeseen recreation trends, e.g. boat market changes.
- Identify seasonal versus year-round demands for particular types of marina services.
- Estimate the effects of other factors influencing variation in marina use or revenue, such as recreation season length, historic temperatures, and ice formation dates.
- Evaluate effects of any synergistic forces such as other tourist industries in the area.
- Include the costs of interest, utility and/or road easements, and preparation of market and feasibility studies, detailed site plans, a site-specific Environmental Assessment (EA), and any required engineering studies.

#### **2.19.11. COST SHARING PROGRAMS FOR RECREATION FACILITIES**

The Secretary of the Army is authorized under Section 225 of Public Law 102-580 (Water Resource Development Act of 1992) to enter into cooperative/cost share agreements with non-Federal public and private entities to provide for operation and/or management and development of recreation facilities and natural resources at water resource development projects where such facilities are being maintained at full Federal expense (ER 1130-2-500 Chapter 12). These types of agreements are contingent on availability of funding through the Corps normal budgeting procedures.

Boat Ramps in the Omaha District are categorized by original construction funds utilized and current management. These categories are:

- a. Category I – Corps built ramp/managed and maintained Corps.
- b. Category II – Corps built ramp/managed and maintained by other agency.
- c. Category III – Corps cost shared ramp expenses with other agency/managed and maintained by other agency.
- d. Category IV - Other agency built ramp/managed and maintained by other agency.

Category I and II boat ramps are the only boat ramps that can be cost shared, due to the fact that these facilities were constructed at full Federal expense.

Other federal acts and or programs are available to assist with recreation and natural resource development and/or improvement.

The Federal Aid in Wildlife Restoration Act, commonly referred to as the Pittman-Robertson Act, approved by Congress in 1937, provides funding to states for the selection, restoration, rehabilitation, and improvement of wildlife habitat and for wildlife management research. The Act was amended in 1979 to include funding for hunter training programs and the development, operation, and maintenance of public target ranges. Funds are derived from Federal excise taxes on sporting arms, ammunition, archery equipment, and handguns. These funds are collected from manufacturers by the U.S. Treasury Department and are apportioned to states by the U.S. Department of the Interior, USFWS, on the basis of the total area of the state and the number of licensed hunters in the state, for reimbursement of up to 75 percent of a state agency's expenditures for eligible projects (USFWS 2005).

The Federal Aid in Sport Fish Restoration Act, commonly referred to as the Dingell-Johnson Act, was passed by Congress in 1950 to provide funding for management, conservation, and restoration of fishery resources. Excise taxes are collected by the U.S. Treasury Department from manufacturers of fishing rods, reels, creels, lures, flies and artificial baits. The Wallop-Breaux Amendment in 1984 extended the excise tax to motorboat fuel sales and added import duties on sport fishing equipment and pleasure boats. Amendments made wetlands conservation projects, boat-waste pumpout facilities, and facilities for recreational boats too large to be trailerable eligible for cost-shared funding and increased the minimum level of spending for boating access, aquatic education and outreach. The USFWS apportions funds among states based on each state's land and water area and its number of licensed anglers and from these funds reimburses state agencies for up to 75 percent of their expenditures on eligible projects (USFWS 2004).

The Land and Water Conservation Fund (LWCF) Act, passed by Congress in 1964 and subsequently amended, established a funding source for matching grants to state and local governments for recreation planning, acquisition, and development. LWCF Act funding varies by year and comes from sales of surplus Federal real property, motorboat fuel taxes, fees for recreation use of Federal lands, Outer Continental Shelf mineral receipts, and other appropriations. LWCF grant-assisted areas are to remain forever available for public outdoor recreation use, or be replaced by lands of equal market value and recreational usefulness (NPS 2005). Requirements for state recreation planning include a regularly updated SCORP that is approved by the National Park Service (NPS). The NPS allocates LWCF matching grant funds among the states, according to a national formula in which state population is the most influential factor. Some LWCF grants are used to match expenditures by state agencies, and some are competed for by local governments; the selection criteria include meeting outdoor recreation needs and priorities identified in the SCORP (NPS 2004). Local governments interested in a LWCF matching grant should contact the ND Parks and Recreation Department.

Ten Lewis and Clark Legacy Trails were approved to receive Federal funding of all or part of their construction costs, with any land required being public land or donated private land (Conrad 2004). Lewis and Clark Legacy trails that have been constructed or are planned at areas within or adjacent to the Lake Sakakawea project include trails in all three State Parks, Indian Hills Recreation Area, and Whitetail Bay Recreation Area (Lund's Landing); the Little Muddy canoe trail from Thompson Landing to White Bridge; the Four Bears Peninsula and Methodist Area trail; and a trail in the vicinity of the New Town Marina (Kubischta 2005, 2007).

#### **2.19.12. CORPS COST SHARING PROGRAMS RELEVANT TO DROUGHT-AFFECTED WATER INTAKES**

Several Corps cost sharing programs are available for planning, design, and/or construction related to drought-affected, publicly operated intakes providing raw water that is then treated to meet State drinking water standards. These cost sharing programs are described in the following paragraphs.



Emergency Water Assistance Due to Drought or a Contaminated Water Source. The Corps of Engineers, under authority of Public Law (PL) 84-99, Emergency Flood Control Funds Act of 1955, as amended by PL 95-51, may provide temporary emergency water assistance for human consumption / usage to an area that is drought-distressed and/or has contaminated water, so that minimum public health and welfare requirements can be met. The Corps may transport emergency supplies of clean drinking water for human consumption and/or construct wells if not commercially possible, but the costs of the drinking water and well construction are State/Tribal/local expenses. Corps assistance is supplemental to State and local efforts. Long-term solutions to water supply problems are the responsibility of State and local entities. Applications should be made to the Corps' Omaha District for assistance (USACE, Northwestern Division 2005, Appendix J). Current contact information is available from the Garrison Project Office in Riverdale, ND.

The Corps provided emergency water assistance to the City of Parshall, ND under this program several times. In 1991, the Corps spent approximately \$240,000 installing a temporary water supply system owned by Div Con, Inc. and removed it after the drought ended because the City opted not to purchase the system. In 2004, the Corps spent about \$3,100,000 installing a temporary water intake and planning, designing, and constructing a new temporary intake, which extends about 3,400 feet out into the bay. This intake was turned over to the City for operation and maintenance and will not be removed by the Corps. In 2005, the City added a vertical extension onto the new intake that can be adjusted to draw water from about 3 feet below the water surface to meet State secondary water quality standards. In 2005 the City also completed a study that evaluated reliable raw water supply alternatives, pursuant to an August 2004 Cooperation Agreement between the Corps and the City of Parshall, as the City's treated well water only meets primary drinking water standards (USACE, Northwestern Division 2005, Appendix D).

Planning Assistance to States and Tribes. This program was authorized by Section 22 of PL 93-251, the Water Resources Development Act of 1974 (WRDA 1974), as amended by Section 605 of PL 96-597 and Section 221 of PL 104-303 (WRDA 1996). States, public entities within States, and federally recognized Indian Tribes can coordinate with the Corps on the scope of work for, and preparation of, a Corps study related to planning for water and related land resources, including development of drought contingency plans. Non-Federal entities pay only 50 percent of the study costs (USACE, Northwestern Division 2005, Appendix J). A letter of application should be provided to the Section 22 Program Manager, in the Corps' Planning Branch, Omaha, NE; current contact information is available from the Garrison Project Office in Riverdale, ND.

Watershed and River Basin Assessments. This program was authorized by Section 202 of PL 106-541 (WRDA 2000), as amended to Section 729 of PL 99-662 (WRDA 1986). The Corps coordinates with other federal agencies to prepare an assessment of six major water resources needs, including water supply and drought preparedness, of specifically authorized river basins and watersheds. Non-Federal public entities pay only 50 percent of the cost of this assessment, and up to half of the non-Federal costs can be work-in-kind (USACE, Northwestern Division 2005, Appendix J).

Environmental Assistance. This program, authorized by Section 595 of PL 106-53 (WRDA 1999), provides non-Federal entities with environmental assistance for specifically authorized projects. The assistance includes design and construction assistance for water supply and related facilities and for wastewater treatment and related facilities. The federal share is 75 percent and may be provided in the form of grants or

reimbursements of project costs. Non-Federal entities receive credit for reasonable costs of design work that was completed prior to entering into a Local Cooperation Agreement with the Secretary of the Army and credit for costs of land, easements, rights-of-way, relocations, and activities associated with obtaining necessary permits, up to 25 percent of total project costs. Operation and maintenance costs are 100 percent non-Federal (USACE, Northwestern Division 2005, Appendix J).

## **2.20. RELATED RECREATIONAL, HISTORIC, CULTURAL, AND SCIENTIFIC AREAS**

### **2.20.1. MAJOR TYPES OF SIGHTSEEING AND OUTDOOR RECREATION**

Lake Sakakawea is the largest expanse of water in the State of North Dakota and thus provides the largest water body for water-oriented recreation. Many opportunities for sightseeing, land- and water-based outdoor recreation, and visiting historical and/or cultural sites exist outside of the Lake Sakakawea project. These off-project sites may appeal to Lake Sakakawea visitors, especially campers and sightseers, who account for nearly half of the visits to the project. The major types of opportunities for these experiences, and the relative frequency with which they were included in visits to ND destinations that involved at least one overnight stay in 2004, are provided in table 2.20.1.

**Table 2.20.1. Sightseeing and Recreation Activities / Experiences Included on Overnight Pleasure Trips in North Dakota in 2004 by North Dakota Residents and Non-Residents.**

<b>Sightseeing Experiences and Recreation Activities</b>	<b>Percent of Overnight Pleasure Trips in ND by Residents of ND</b>	<b>Percent of Overnight Pleasure Trips in ND by Non-Residents</b>
Lakes / rivers	45 %	28 %
Small towns / villages	41 %	41 %
Rural farming areas	41 %	50 %
Wilderness areas	21 %	18 %
Unusual wildlife	20 %	16 %
Explore natural environment	18 %	16 %
National / State Park	15 %	10 %
Viewing wildlife/birds; wildlife refuge	12 %	7 %
Swam in lake or river; lakeside beach	12 %	2 %
Historic / cultural areas	11 %	17 %
Beautiful fall colors	10 %	3 %
Landmarks / historic sites	8 %	11 %
Hiking; jogging / running	7 %	8 %
Fishing	7 %	6 %
City park / garden	6 %	25 %
Water skiing	4 %	1 %
Hunting	4 %	< 1 %
Golf	4 %	< 1 %
Power boating / sailing	4 %	< 1 %
Museum / science exhibit	< 1 %	4 %
Zoo	< 1 %	2 %
Bicycling	< 1 %	1 %

Source: Longwoods International. 2005. North Dakota Visitor Study Based on 2004 Travel Season, with 2 appendices: In-State Trip Experience; and Out-of-State Trip Experience.  
Prepared for ND Department of Commerce, Tourism Division, Bismarck, ND.

ND outdoor recreation attractions are seen by most participants as safe, uncrowded, and family-friendly. The characteristics associated with overnight pleasure trips (which can also pertain to day trips) in which ND outscores the United States as a whole are: “not too crowded”, “safe in tourist areas”, “worry free”, “warm, friendly people”, “safe anywhere”, and “good place to relax”. “Family atmosphere” was rated as extremely important for overnight pleasure trips (Longwoods International, 2005).

## **2.20.2. RELATED HISTORICAL, CULTURAL, SCIENTIFIC, AND OUTDOOR RECREATION AREAS**

Interesting scenery, adventuresome and educational experiences, and opportunities for a variety of outdoor recreation opportunities appear to be abundant at and near Lake Sakakawea. These off-project sites can be complementary, providing a greater variety of experiences for Lake Sakakawea visitors. However, they may also compete with Lake Sakakawea for visitors by providing an alternative to Lake Sakakawea as a primary destination site for recreation on any given day or overnight trip.

In 2004, the main destination for overnight pleasure trips in ND was in the East Region for 32 percent of ND residents and 57 percent of non-residents (Longwoods International, 2005). The four remaining regions in ND, taken together, are roughly equivalent to the Lake Sakakawea area of influence, or market area. This area of influence encompasses 26 counties in ND that are within about a 2-hour drive from the lake. The percentages of resident and non-resident ND overnight pleasure trip destinations that are located in each of the four regions are provided in table 2.20.2. Table 2.20.2 also lists the major historical, cultural, scientific, and outdoor recreational areas in each region. The percentages of overnight trips in ND that included these attractions are provided in table 2.20.2 where data is available.

**Table 2.20.2. Major Recreational, Historical, Cultural, and Scientific Areas in the Lake Sakakawea Area of Influence that are Related to Opportunities at Lake Sakakawea.**

<b>Four ND Tourism Regions in the Lake Sakakawea Vicinity and Attractions that May Complement or Compete with Lake Sakakawea Visits</b>	<b>County</b>	<b>Type of Area or Site</b>	<b>Percent of Resident Overnight Pleasure Trips in ND</b>	<b>Percent of Nonresident Overnight Pleasure Trips in ND</b>
<b>LEWIS &amp; CLARK TRAIL REGION</b>			4% of ND destinations	1% of ND destinations
Lewis & Clark Interpretive Center	McLean	Historical	4 % of ND overnights	3 % of ND overnights
Fort Mandan	McLean	Historical	4 %	1 %
Lake Sakakawea*	6 counties	Recreational	1 %	7 %
Missouri-Yellowstone Confluence Interpret. Center	Williams	Historical & Geological	< 1 %	4 %
Ft. Buford State Historic Site	Williams	Historical	< 1 %	3 %
Fort Union Trading Post	Williams	Historical	< 1 %	2 %
Knife River Indian Villages	Mercer	Cult./Historic	< 1 %	< 1 %
<b>CENTRAL REGION</b>			21% of ND destinations	19% of ND destinations
Lake Metigoshe State Park	Bottineau	Recreational	9 %	2 %
Garrison Dam Power Plant*	Mercer	Scientific	4 %	5 %
Roosevelt Park Zoo	Ward	Zoological	4 %	2 %
Scandinavian Heritage Park	Ward	Cultural	4 %	2 %
Pioneer Village & Museum	Ward	Historical		
Three Tribes Museum	Mountrail	Cultural	< 1 %	2 %
Paul Broste Rock Museum	Mountrail	Geological	< 1 %	1 %
Upper Souris National Wildlife Refuge	Renville & Ward	Ecological		
<b>WEST REGION</b>			38% of ND destinations	19% of ND destinations
North Dakota Capitol	Burleigh	Historical	6 %	8 %
N. Dakota Heritage Center	Burleigh	Historical	4 %	4 %
Enchanted Highway	Stark & Hettinger	Cultural	< 1 %	6 %
Ft. A. Lincoln/ Custer House	Morton	Historical	1 %	1 %

<b>Four ND Tourism Regions in the Lake Sakakawea Vicinity and Attractions that May Complement or Compete with Lake Sakakawea Visits</b>	<b>County</b>	<b>Type of Area or Site</b>	<b>Percent of Resident Overnight Pleasure Trips in ND</b>	<b>Percent of Nonresident Overnight Pleasure Trips in ND</b>
On-a-Slant Indian Villages	Morton	Cult/Historic	1 %	1 %
Lewis and Clark Riverboat	Burleigh	Recreational	1 %	< 1 %
Dakota Dinosaur Museum	Stark	Paleontologic	1 %	< 1 %
Pioneer Machinery Museum	Stark	Historical		
Lake Oahe (portion in ND)	4 counties	Recreational		
Lake Tschida	Grant	Recreational		
ND State Railroad Museum	Morton	Historical		
Great Plains Synfuels Plant	Mercer	Scientific		
Lake Ilo Nat Wildlife Refuge	Dunn	Ecological		
<b>BADLANDS REGION</b>			<b>5% of ND destinations</b>	<b>4% of ND destinations</b>
Theodore Roosevelt National Park, North & South Units	McKenzie & Billings	Recreational / Nature Interp.	10 %	10 %
Medora (Museums, Zoo)	Billings	Hist/Zool/Cult	7 %	6 %
Medora Musical	Billings	Cultural	4 %	3 %
Chateau de Mores State H.S.	Billings	Historical	< 1 %	3 %
Museum of the Badlands	Billings	Historical	< 1 %	2 %
Maah Daah Hey Trail	McKenzie & Billings	Recreational	< 1 %	< 1 %
Little Missouri Primitive SP	Dunn	Recreational		
Lewis / Clark Trail Museum	McKenzie	Historical		
Pioneer Museum	McKenzie	Historical		
Pioneer Trails Reg. Museum	Bowman	Hist/Paleontol		
Little Missouri National Grasslands	4 counties	Ecological / Recreational		
<b>LAKE SAKAKAWEA AREA OF INFLUENCE</b>	<b>26 counties</b>		<b>68% of ND destinations</b>	<b>43% of ND destinations</b>

\*Project areas asterisked are technically not “related areas”. Recreation areas at Lake Sakakawea receive much day-use visitation that is not reflected in the percentages shown (especially for ND residents), which were derived from surveys regarding overnight trips in ND.

## 2.21. REAL ESTATE

### 2.21.1. LAND AND ACQUISITION HISTORY

Under the authority of the Flood Control Act of 1944, Public Law (PL) 534, 78th Congress, 2nd session, the Corps acquired large acreages of land for the Garrison Dam/Lake Sakakawea project. It was the general desire of the Administration at the time of acquisition that new project lands be restricted to the minimum that would serve the operation and maintenance requirements and meet the readily foreseeable public access demand. The original acquisition criteria followed by the Corps were generally consistent with that policy.

Fee simple acquisition of land for the Garrison project was established by blocking out the guide acquisition lines generally with a maximum of a 10-acre subdivision based on

the U.S. public land survey system. The guide acquisition lines were 1854 feet above mean sea level (msl) for the majority of the project and slightly higher elevations in the headwaters area. These guide acquisition lines were established by using expected water elevations based on either a maximum operating pool or the area affected by backwater, aggradation, bank caving, and erosion due to wind effects and wave actions.

#### **2.21.2. FLOWAGE EASEMENTS**

The flowage easements acquired for the project give the Government a perpetual right to overflow or flood the land when necessary as a result of construction, maintenance, and operation of the project. The Government also has the right to enter the easement lands as needed and to remove any natural or manmade obstructions or structures that, in the opinion of the Government, may be detrimental to the operation and maintenance of the project. The flowage easements were acquired subject to "existing easements for public roads and highways, public utilities, railroads, and pipe lines."

Historically, it has been Corps policy to prohibit structures for human habitation on flowage easements acquired by the Corps of Engineers. Construction and/or maintenance of uninhabitable structures on the flowage easement are subject to prohibition or regulation by the District Engineer.

In 1996, Congress passed PL 104-303, which required the Government to purchase flowage and saturation easements from willing sellers within the Buford-Trenton Irrigation District located on the headwaters of the Garrison Dam/Lake Sakakawea project and southwest of Williston, North Dakota. To date, the acquisition of flowage easements is nearly complete and will include approximately 11,750 additional acres of lands included in the flowage easement category of project lands.

#### **2.21.3. CURRENT LANDHOLDINGS**

Four types of land tenure were acquired for the Garrison Dam/Lake Sakakawea project:

- Land owned by private parties in their own right or by State or local governments;
- Land owned by the United States on behalf of the Tribes (trust lands);
- Land owned by the United States on behalf of Indian individuals (allotted trust lands); and
- Land owned by the United States in its own right or as public domain.

Generally, the Government acquired a fee simple estate from private and public landowners within the project boundaries. The Government rights are subject only to certain existing easements or rights on the land prior to purchase by the Government. The United States bought or condemned land from non-Indians on both sides of the river. However, as lands owned by the Three Affiliated Tribes and their members were held in trust by the United States, such lands could only be transferred to the Corps by an act of Congress. Congress passed a law to accomplish this purpose. PL 81-437, approved October 29, 1949, acquired 152,518.88 acres of land from the Three Affiliated Tribes and individual members of the Tribe (E Tracts). PL 81-437 reserved certain rights, title, interest, and privileges in the acquired land and structures for the Tribes and their members.

Approximately 2,824 acres used for the project were public domain lands held in the possession of the U.S. Government since the Louisiana Purchase. The Secretary of the Interior withdrew, permanently set aside, and reserved these lands for the Army for use in connection with the Garrison Dam/Lake Sakakawea project by issuing two Public Land Orders. Public Land Order 1078, dated February 25, 1955, permanently reserved 2503.32 acres (A Tracts). Public Land Order 1809, dated February 27, 1959, permanently reserved 321.06 acres (D Tracts).

Other lands needed for the Garrison Dam/Lake Sakakawea project were obtained by the Department of the Army from other federal agencies. Executive Order No. 10520, dated March 10, 1954, transferred 3,204.59 acres (C Tracts) from the Department of Agriculture, Forest Service, to be used for the project. The Department of the Interior, Bureau of Indian Affairs, transferred 240 acres of land to be used for the project (B Tracts) by Property Invoice dated September 26, 1957. The Department of Agriculture, Forest Service, made 35.04 acres of land available for project use (right to flood) by Memorandum of Understanding dated June 29, 1979.

In addition to these landholdings, the Garrison Dam/Lake Sakakawea project included approximately 30,000 acres of riverbed, owned by the State of North Dakota, that was not acquired (USACE 1985). These 30,000 acres remain sovereign lands that are owned and managed by the State of North Dakota, through the Office of the State Engineer (N.D.C.C. 61-33-05) and the State Land Department (N.D.C.C. 61-33-03) (Frink 2007b).

Table 2.21.1 reflects the approximate number of acres owned by the Government at the Garrison Dam/Lake Sakakawea project, by county, at the time this Master Plan/EA was prepared and reflects land disposals since original acquisition (see section 2.21.4 for information on land disposals).

**Table 2.21.1. Government-Owned Lands, Garrison Dam/Lake Sakakawea Project.**

<b>Acquisition Type</b>	<b>Dunn County</b>	<b>McKenzie County</b>	<b>McLean County</b>	<b>Mercer County</b>	<b>Mountrail County.</b>	<b>Williams County</b>	<b>Total Acres</b>
Fee	59,285	68,568	157,428	51,062	64,706	48,262	449,311
Flowage easement	0	273	484	125	400	2,179	3,461
Public domain	303	1,125	131	0	489	776	2,824
Other	0	35	0	0	0	0	35
Total acres	59,588	70,001	158,043	51,187	65,595	51,217	455,631

Source: USACE Real Estate Management Information System, February 2007.

#### **2.21.4. LAND DISPOSALS**

The acquisition of lands for the Garrison Dam/Lake Sakakawea project was accomplished between 1946 and 1958. Since 1958, the Corps has utilized the disposal process to excess and/or transfer to other federal agencies, private citizens, and other entities various tracts of project lands that were no longer required for meeting project purposes. This was done for a variety of reasons, including public laws, special assessments, cabin site sales, and resolution of minor encroachments. Lots at eight cabin sites were sold in the 1960s and 1970s, and lots at two additional cabin sites were sold in the 1990's. In 1992, as a result of a Special Assessment of Land within the Fort Berthold Indian Reservation, 5,878.25 acres were transferred to the Department of the Interior, Bureau of Indian Affairs (BIA). An additional 188.0 acres, known as the Four Bears Complex, was transferred to the BIA by PL 102-575. Additionally, small amounts of project lands have been deeded to private individuals to resolve a handful of minor encroachments. As of the time this Master Plan/EA was prepared, fee and easement disposals totaled 9,799.25 acres. The number of acres disposed of in each county is as follows: Dunn County, 2,369.23 acres; McKenzie County, 1,025.02 acres; McLean County, 4,624.20 acres; Mercer County, 890.87 acres; Mountrail County, 821.27 acres; and Williams County, 126.77 acres. All these disposals are accounted for in table 2.21.1.

As of the time this Master Plan/EA was prepared, the Corps had identified approximately 24,000 acres of project lands that were no longer required for project purposes within the land area of the Fort Berthold Reservation that could potentially be transferred to the Department of the Interior for the BIA to hold in trust for the Three Affiliated Tribes. No decision had yet been made regarding the potential transfer, which is discussed in greater detail in the Potential Transfer of Garrison Project Lands section of Chapter 3.

#### **2.21.5. EXECUTIVE ORDER SURVEYS**

Executive Order 12512, dated April 25, 1985, and the Federal Property Management Regulations contained in 41 Code of Federal Regulations (CFR) 101-47 require periodic review of project landholdings to determine if federal lands are being either overused or underused or are not being put to optimum use. To meet this requirement, the Omaha District conducts informal annual use inspections of all projects, including the Garrison Dam/Lake Sakakawea project. An Executive Order Survey is usually conducted every fifth year and forwarded to the General Services Administration (GSA) through Headquarters, U.S. Army Corps of Engineers (HQUSACE) for approval and acceptance. This Executive Order Survey replaces the annual use inspection for that year.

#### **2.21.6. ENCROACHMENTS**

The majority of encroachments on project lands are associated with recreational cabin areas and adjacent landowners and to a lesser degree, agricultural/grazing leases. Adjacent landowners and lessees sometimes expand their recreational use or farming/ranching operations onto Corps-managed land without the appropriate authorization. Small portions of project lands are sometimes used for private exclusive use or grazed or farmed. Occasionally, adjacent landowners will store recreational- or household-related personal property or machinery, construct corrals, or erect storage buildings on Government land. When Corps staff identifies any encroachments during annual real estate inspections and/or routine patrols, the Corps coordinates with the



individual or entity involved to resolve the encroachment(s). If needed, the Corps undertakes measures such as monumenting the boundary, installing signage, or erecting fencing to minimize the probability of future encroachments.

#### **2.21.7. BOUNDARY MONUMENTATION AND FENCING**

Approximately 65 percent of the project boundary has been surveyed and monumented. This was accomplished under two major contract surveys, one done in 1972 and the second from 1984-1986. In addition, individual surveys of small portions of the boundary have been and continue to be done on an as-needed basis to recover lost boundary markers or establish the Government boundary in areas of concern or dispute. Also, original surveys have been retraced to establish the property line before constructing boundary fences. The project boundary will continue to be inventoried, resurveyed, and monumented as needed and as funding permits. Signing of unfenced project boundaries are also important in preventing inadvertent encroachments.

#### **2.21.8. RELOCATION CONTRACTS**

A relocation contract is an agreement that provides substitute facilities for those acquired facilities that will interfere with project development. State and county roads, railroads, school facilities, telephone and electric lines, and cemeteries were relocated during the construction of the dam and reservoir.

There are currently no outstanding or ongoing relocation contracts active on the Garrison project.

#### **2.21.9. OUTGRANTS**

An outgrant document is any real estate instrument used to convey an interest in or temporary use of project land. The types of outgrants issued at Garrison Dam/Lake Sakakawea project include leases, easements, licenses, permits, and letter grants. As of February 2007, the Corps maintained 764 outgrants of record on project land.

Outgrants are issued to private and public individuals and entities based on need and a determination by the Corps that the requested lands are available for the use requested. Outgrant requests are reviewed to confirm that if issued, they will conform to the requirements of various federal, state and local laws and ordinances and federal executive orders and regulations. Engineer Regulation (ER) 405-1-12, Change 30, dated September 30, 1994, and other applicable regulations detail the process of outgrant management.

##### **2.21.9.1. Leases**

A lease is a contract between the owner (lessor or landlord) and the tenant (lessee) setting forth the term of occupancy and the conditions under which the tenant may occupy and use the property. A lease conveys an interest in the property for a set term. As of the time this Master Plan/EA was prepared, there were a total of 156 leases on the project. These leases on the project include 1 fish and wildlife management lease issued to the North Dakota Game and Fish Department (NDGFD), 44 public park and recreation/quasi-public/private recreation leases, 86 agricultural/grazing leases, 23 oil and gas leases, and leases for 2 cottage-site lots. Regarding the 2 leases for cottage-site lots,

all other cottage-site lots previously established by the Corps of Engineers on project lands have been sold to private landowners.

#### **2.21.9.2. Easements**

An easement allows one party to use certain lands of another party. An easement conveys an interest in the property. Rights-of-way are the most frequent easement request for public land. As of the time this Master Plan/EA was prepared, there were 340 easements on the project for rights-of-way for waterlines, roads, electric power lines, gas pipelines, and miscellaneous uses.

#### **2.21.9.3. Licenses**

A license grants authority to enter or use another's land or property without having ownership in it or grants permission to perform a specific act. It is revocable at will. Action without a license constitutes trespass. This type of outgrant includes Archeological Resources Protection Act permits issued pursuant to 32 CFR 229. As of the time this Master Plan/EA was prepared, there were 193 licenses issued on the project, of which the majority are "One-stop" shoreline use licenses.

#### **2.21.9.4. Permits**

A permit is a revocable privilege granted to another federal agency to use real property for a specific purpose without conferring possession. At the time this Master Plan/EA was prepared, there were 13 permits issued to various federal agencies on the project. This also includes Cooperative Agreements issued for wildlife management purposes.

#### **2.21.9.5. Letter Grants**

A letter grant is similar to a license in the fact that it grants authority to enter onto property of the Government or grants permission to perform a specific act. As of the time this Master Plan/EA was prepared, 62 Letter Grants were issued, mainly for the placement of oil and gas wells, temporary seismic operations, and the placement of utilities within an outgranted recreation area.

### **2.21.10. SPECIAL CONSIDERATIONS**

#### **2.21.10.1. General Plan for Use of Project Lands and Waters for Wildlife Conservation and Management**

This plan is an agreement signed by: the Assistant Secretary of the Army (Civil Works) on December 23, 1982; the Assistant Secretary of Fish and Wildlife for the Department of the Interior on January 13, 1983; and the Commissioner (Director) of the North Dakota Game and Fish Department on April 7, 1982. This General Plan is an amendment to the original General Plan approved June 8, 1955; it designates and ensures that certain lands on the project are available for fish and wildlife conservation and management purposes. The project lands included in the General Plan are currently leased to the NDGFD by Lease No. DACW45-1-06-8040, or are directly managed by the Corps and available to be leased by the NDGFD at a future date.

#### **2.21.10.2. Grazing Rights within the Fort Berthold Indian Reservation**

PL 87-695, dated September 25, 1962, provided that "the Three Affiliated Tribes of the Fort Berthold Reservation shall be permitted to graze stock without charge on such former Indian land as the Secretary of the Army determines is not devoted to other beneficial uses and to lease such land for grazing purposes to members or nonmembers of the tribe on such terms and conditions as the Secretary of the Interior may prescribe."

Section 205 of PL 98-602 amended PL 87-695 by striking out "such former Indian land" and inserting in lieu thereof "such land". This amendment required the Government to include additional lands within the Fort Berthold Reservation acquired from non-Indians as available for grazing purposes to members and nonmembers of the tribe.

## **2.22. MANAGEMENT PLANS**

There are several management plans that provide the direction of activities and, in some cases, expenditures for the Garrison Dam/Lake Sakakawea project. These plans are discussed below. They include: the Cultural Resource Management Plan (CRMP), the General Plan, the North American Waterfowl Management Plan (NAWMP), the National Invasive Species Management Plan, the Operational Management Plan (OMP), and the Shoreline Management Plan. All of these plans are interrelated, and each must be considered when planning for the future.

### **2.22.1. CULTURAL RESOURCES MANAGEMENT PLAN (CRMP)**

The CRMP provides detailed information on a comprehensive program to direct historic preservation compliance activities and the effective and responsible management of historic properties and other cultural resources at the Garrison Dam/Lake Sakakawea project. For more information on the CRMP for the Lake Sakakawea project, contact the Omaha District Office. The portions of the CRMP that are available to the general public are provided as Appendix F to this Master Plan/EA.

### **2.22.2 GENERAL PLAN**

Guidelines for General Plans are found in Section 663(b) of the Fish and Wildlife Coordination Act (Public Law 85-624). This General Plan, approved in January 1983, supersedes that portion of a General Plan for Fish and Wildlife Management which was approved by the Secretary of the Interior, the Secretary of the Army, and the Commissioner of the North Dakota Game and Fish Department in June 1955. The signature by the Secretary of the Interior represents coordination with the USFWS and the BIA.

### **2.22.3. NORTH AMERICAN WATERFOWL MANAGEMENT PLAN (NAWMP)**

The U.S. Department of the Interior, Fish and Wildlife Service (USFWS) approved the NAWMP in May 1986, and the U.S. Prairie Pothole Joint Venture Implementation Plan was approved as a component of the NAWMP in April 1989. In 1989, the Department of the Interior and the Corps of Engineers signed a Memorandum of Understanding (MOU) in support of the NAWMP. The NAWMP is a guideline for cooperation between public and private groups for restoring waterfowl habitat and populations to the same amounts as existed in the early 1970s. The NAWMP will be implemented through "Joint

Ventures” of public and private groups. The NAWMP identified 34 key areas to focus on for the Joint Ventures. The Prairie Pothole region was one of the areas identified, and the Prairie Pothole Joint Venture (PPJV) was formed. The Prairie Pothole region in North Dakota is a significant resource and supports an abundance of wildlife and migratory birds.

#### **2.22.4. NATIONAL INVASIVE SPECIES MANAGEMENT PLAN**

Executive Order 13112 requires the National Invasive Species Council to produce a National Management Plan for Invasive Species every two years. In January 2001, the National Invasive Species Council released the first National Management Plan, which serves as a blueprint for all federal actions on invasive species. The National Management Plan was written in association with eight working groups, the Invasive Species Advisory Committee, and input obtained from the public at public hearings held across the country. The 2001 National Invasive Species Management Plan focuses on those non-native species that cause or may cause significant negative impacts and do not provide an equivalent benefit to society. It had not been updated as of the time this Master Plan was prepared.

#### **2.22.5. OPERATIONAL MANAGEMENT PLAN (OMP)**

The OMP is a management action document that describes in detail how resource objectives and conceptual development prescribed in the Master Plan will be implemented and achieved. The current OMP for the Garrison Dam/Lake Sakakawea project was approved in October 2003. It is scheduled to be updated after the Master Plan/EA is approved.

#### **2.22.6. SHORELINE MANAGEMENT PLAN**

A Shoreline Management Plan is prepared as part of the Operational Management Plan. It is the policy of the Chief of Engineers to protect and manage shorelines of all Civil Works water resource development projects under Corps jurisdiction in a manner that will promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. The objectives of all management actions are to achieve a balance between permitted private uses and resource protection for general public use. This plan is prepared for each Corps project where private shoreline use is allowed. Private shoreline uses may be authorized in designated areas consistent with approved use allocations specified in the Shoreline Management Plan. The Shoreline Management Plan for the Garrison Dam/Lake Sakakawea project was last approved in 2003. The Shoreline Management Plan is scheduled to be updated shortly after approval of this updated Master Plan/EA.

### **2.23. CORPS REGULATORY PROGRAM**

The Department of the Army regulatory program is one of the oldest in the Federal Government. Initially it served a fairly simple, straightforward purpose: to protect and maintain the navigable capacity of the nation's waters. Time, changing public needs, evolving policy, case law, and new statutory mandates have changed the complexion of the program, adding to its breadth, complexity, and authority.

The purpose of the Clean Water Act, Section 404 (b) Rivers and Harbors Act, Section 10 is to insure that the physical, biological, and chemical quality of our nation's water is protected from irresponsible and unregulated discharges of dredged or fill material that could permanently alter or destroy these valuable resources.

#### **2.23.2.1. Clean Water Act, Section 404 (b)**

The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits for discharges of dredge or fill materials into the waters of the United States, provided that such discharges are found to be in compliance with the guidelines published by Environmental Protection Agency (EPA) to implement Section 404 (b) of the Clean Water Act.

#### **2.23.3. RIVERS AND HARBORS ACT, SECTION 10**

Section 10 of the Rivers and Harbors Act of 1899, requires that the Chief of Engineers must approve plans to build or modify any structure in or over any navigable water of the United States, or the accomplishments of any other work affecting the course, location, condition, or physical capacity of navigable waters.

#### **2.23.4. APPLICATION**

Information concerning the application process is available at the Garrison Project Office and the North Dakota Regulatory Office. Information is also available at:  
<https://www.nwo.usace.army.mil/html/od-rnd/ndhome.htm>

## **2.24. PERTINENT PUBLIC LAWS AND COMPLIANCE WITH ENVIRONMENTAL STATUTES**

### **2.24.1. CIVIL AUTHORITY**

Except as otherwise provided by Federal law or regulation, State and local laws and ordinances apply on Garrison project lands and waters. These include, but are not limited to, the following:

- Operation and use of motor vehicles, vessels, and aircraft;
- Hunting, fishing, and trapping;
- Display or use of firearms or other weapons;
- Camping, starting or tending fires, and use of fireworks;
- Civil, disobedience, and criminal acts; and
- Littering, sanitation, and pollution.

Enforcement of State and local laws and ordinances will be handled by the appropriate State and local law enforcement agencies.

### **2.24.2. CORPS AUTHORITY**

Rules and regulations governing public use of water resources development projects administered by the Corps are contained in Title 36, Part 327 of the Code of Federal Regulations. Persons designated by the District Engineer have the authority to issue citations for violations of rules and regulations governing public use of Corps water resource projects. If a citation is issued, the person charged with the violation may be required to appear before a U.S. Magistrate for trial.

### **2.24.3. FEDERAL AUTHORITY**

The following Federal public laws, Executive Orders, and cooperative agreements pertain to authorization of the project, present and future development, and operation of project lands and waters.

#### **2.24.3.1. General Laws and Authorities**

Public Law 534, 78th Congress (58 Stat. 887), 22 December 1944, Flood Control Act of 1944, as amended. *In compliance.* This Act authorizes the construction of certain public works on rivers and harbors for flood control and other purposes. Section 4 authorizes providing facilities at reservoir areas for public use, including recreation and fish and wildlife conservation. As amended in 1962 by Section 297 of Public Law 87-874, the Act authorizes the Corps to develop and maintain park and recreation facilities at all water resources projects controlled by the Secretary of the Army. The Garrison project is part of the multipurpose reservoir system on the Missouri River and provides for flood control, navigation, irrigation, hydropower, recreation, and fish and wildlife conservation.

Public Law 80-296 (61 Stat. 686), 31 July 1947, as amended. *In compliance.* This Act authorizes \$5,105,625 for the payment of direct damages and the relocation and reestablishment of Tribal members living in the taking area for the Garrison project. This Act was modified by Public Law 81-437.

Public Law 81-437 (63 Stat. 1026), 29 October 1949. *In compliance.* This Act provides that the relocation and reestablishment of Indian cemeteries, Tribal monuments, and shrines would also be paid out of the \$5,105,625 authorized under Public Law 80-296. Public Law 81-437 also provides an additional \$7,500,000 for all other claims.

Public Law 84-1028 (70A Stat. 150), 10 August 1956. *In compliance.* Section 2667 authorizes the Secretary of a military department to lease non-excess land when it is advantageous to the United States. Grazing leases are authorized under this provision. Sections 2668 and 2669 authorize the granting of easements and rights-of-way for many purposes, including transmission lines and gas, water, and sewer pipelines. At the Garrison project, grazing leases are issued and easements and rights-of-way are granted for many purposes.

Public Law 87-695 (76 Stat. 594), 25 September 1962, as amended. *In compliance.* This Act permits the Three Affiliated Tribes to graze livestock, without charge, on former Tribal land as the Secretary of the Army determines is not devoted to other beneficial use and on such terms as the Secretary of the Interior may prescribe. This Act was modified by Public Law 98-602.

Public Law 89-72 (79 Stat. 213), 9 July 1965, Federal Water Project Recreation Act, as amended. *In compliance.* This Act requires that full consideration be given to opportunities for recreation and fish and wildlife enhancement; that recreation planning be based on coordination of use with existing and planned Federal, State, and local recreation; and that non-Federal administration of recreation and enhancement areas be encouraged. It requires that no facilities for recreation and fish and wildlife enhancement be provided without cost-sharing except those justified to serve other project purposes or as needed for public health and safety. The views of the Secretary of the Interior regarding the extent to which the proposed recreation and fish and wildlife development conforms to and is in accordance with the State Comprehensive Outdoor Recreation Plan shall be included in any project report. The purposes of the Garrison project include recreation and fish and wildlife enhancement. The updated Master Plan/Environmental Assessment (EA) includes project-wide goals and site-specific resource objectives and development needs that relate to recreation and to fish and wildlife.

Public Law 89-80 (79 Stat. 244), 20 July 1965, Water Resources Planning Act, as amended. *In compliance.* This Act is a Congressional Statement of policy to meet rapidly expanding demands for water throughout the Nation. The purpose is to encourage the conservation, development, and use of water-related land resources on a comprehensive and coordinated basis by Federal, State, and local governments, individuals, corporations, business enterprises, and others concerned. A steering committee composed of representatives of Federal, State, Tribal, and local governments, and non-governmental organizations has provided input to the Corps on the content of the Master Plan/EA and the effects of development and management activities proposed in the Master Plan/EA on water-related land resources. The Corps also held public workshops attended by Federal, State, and local representatives and members of the

general public (including members of the business community) and invited public comments to gather public input on the Master Plan/EA.

Public Law 90-483 (82 Stat. 731), 13 August 1968, River and Harbor Act of 1968, as amended. *In compliance.* This Act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and other purposes. Section 210 restricts the collection of entrance fees at Corps lakes and reservoirs after 31 March 1970 to users of highly developed facilities requiring the continuous presence of personnel. Because the Corps will be conducting any projects under the updated Master Plan/EA, no authorization is required because the law specifically exempts the Corps of Engineers from regulation under Section 10. However, activities by non-Corps entities in waters of the U.S. at the Garrison project are regulated under Section 10. Work such as a boat dock installation or water intake line requires a Section 10 permit application; for work that includes placing fill, a joint Section 404/10 permit application can be made.

Executive Order 11644, 8 February 1972, Use of Off-Road Vehicles on Public Lands. *In compliance.* This Executive Order establishes a uniform Federal policy regarding the use of vehicles such as trail bikes, snowmobiles, dune buggies, and others on public lands. Section 3 of this Order provides guidance for establishing zones of use for such vehicles. This Order was amended by Executive Order 11989. Currently there are no designated ORV areas at Lake Sakakawea, and the use of ORVs along the shoreline is prohibited.

Executive Order 11989, 24 May 1977, Off-Road Vehicles on Public Lands. *In compliance.* This Executive Order excludes any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, from the definition of ORV. This Order also directs agencies to immediately close ORV trails that are causing soil, vegetation, wildlife, wildlife habitat, or cultural or historic resources of particular areas or trails on public lands, to the type of ORV causing the adverse effects, until the effects have been eliminated and measures have been implemented to prevent future recurrence. Currently there are no designated ORV areas at Lake Sakakawea, and the use of ORVs along the shoreline is prohibited.

Public Law 98-602 (98 Stat. 3149), 30 October 1984, Fort Berthold Mineral Restoration Act. *In compliance.* The Fort Berthold Mineral Restoration Act allocated all mineral interests in certain lands located within the exterior boundaries of the Fort Berthold Indian Reservation which were acquired by the U.S. for the construction, operation, or maintenance of the Garrison project. In accordance with this Act, the Corps is currently in the process of identifying any Garrison project lands within the exterior boundaries of the Fort Berthold reservation that are no longer needed for project purposes and could potentially be transferred to the Department of the Interior to be held by the Bureau of Indian Affairs in trust for the Tribes.



Public Law 99-662 (100 Stat. 4082), 17 November 1986, Water Resources Development Act of 1986. *In compliance.* This legislation sets forth non-Federal cost-sharing requirements for all water resources projects. Section 906 of this Act supplemented the responsibility and authority of the Secretary of the Army pursuant to the Fish and Wildlife Coordination Act. The Corps will cost-share projects that involve non-Federal sponsors in accordance with this Act.

Public Law 102-575 (106 Stat. 4731), 30 October 1992, Title XXXV – Three Affiliated Tribes and Standing Rock Sioux Tribe Equitable Compensation Act. *In compliance.* This Act authorized the allocation of \$149.2 million to the Three Affiliated Tribes as compensation for 152,360 acres taken from the tribe for the Garrison project. The Act also provided that certain lands acquired by the Government in areas surrounding the reservoir created by Garrison Dam would be offered for sale to the owners from whom they had been purchased or to their heirs. All land not acquired by the original owners or heirs would be available for purchase by the Three Affiliated Tribes. The land transfer part of this Act was repealed when Congress passed Public Law 103-211 in 1994.

Public Law 103-211 (108 Stat. 3,41), 12 February 1994, Emergency Supplemental Appropriation Act. *In compliance.* Section 407 of this Act repealed the land transfer provisions of Public Law 102-575 as they pertained to the Garrison project.

#### **2.24.3.2. Environmental Quality Statutes**

40 Stat. 755, 13 July 1918, Migratory Bird Treaty Act (MBTA), as amended.

*In compliance.* The MBTA of 1918 is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent overutilization. Executive Order 13186 (2001) directs executive agencies to take certain actions to implement the Act. When development proposed in the updated Master Plan/EA is scheduled to occur, compliance with the MBTA will be considered along with environmental compliance for the specific activities.

54 Stat. 250, 8 June 1940, Bald Eagle Protection Act of 1940, as amended.

*In compliance.* This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. Corps activities will avoid disturbing the nesting sites of bald eagles.

Public Law 83-566 (68 Stat. 666), 5 August 1954, Watershed Protection and Flood Prevention Act. *Not applicable.* This Act authorizes the Secretary of Agriculture to

cooperate with States and other public agencies in works for flood prevention and soil conservation, as well as the conservation, development, utilization, and disposal of water. This Act imposes no requirements on Corps Civil Works projects.

Public Law 85-624 (72 Stat. 563), 12 August 1958, Fish and Wildlife Coordination Act. *Not applicable.* The FWCA requires governmental agencies, including the Corps, to coordinate activities so that adverse effects on fish and wildlife will be minimized when the waters of any stream or other body of water are proposed for modification. The updated Master Plan/EA does not propose any Corps actions that involve modifications to Lake Sakakawea or its tributary streams.

Public Law 86-717 (74 Stat. 817), 6 September 1960, Conservation of Forest Lands in Reservoir Areas. *In compliance.* This law provides for the development and maintenance of forest resources on Corps-managed lands and the establishment and management of vegetative cover so as to encourage future resources of readily available timber and to increase the value of such areas for conservation. Resource objectives and development needs for the management units include planting trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species; planting trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl; and developing additional woody draw habitat.

Public Law 87-88 (75 Stat. 204), 20 July 1961, Federal Water Pollution Control Act Amendments of 1961, as amended. *In compliance.* Section 2 (b) (1) of this Act gives the Corps responsibility for water quality management of Corps reservoirs. This law was amended by the Federal Water Pollution Control Act Amendment of 1972, Public Law 92-500.

Public Law 88-758 (78 Stat. 897), 3 September 1964, Land and Water Conservation Fund Act (LWCFA), as amended. *In compliance.* Planning for recreation development at Corps projects is coordinated with the appropriate States so that the plans are consistent with public needs as identified in the SCORP. The Corps must coordinate with the National Park Service (NPS) to insure that no property acquired or developed with assistance from this Act will be converted to other than outdoor recreation uses. If conversion is necessary, approval of NPS is required, and plans are developed to relocate or re-create affected recreational opportunities. The ND Parks and Recreation Department (NDPRD) used LWCFA funds to develop some recreation facilities at the State Parks located on Garrison Dam/Lake Sakakawea project lands, but the NDPRD is continuing to manage these areas for outdoor recreation.

Public Law 90-542 (82 Stat. 906), 2 October 1968, Wild and Scenic Rivers Act, as amended. *Not applicable.* This Act establishes that certain rivers of the Nation, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Missouri River

Reach where the Garrison project is located is not designated as a wild or scenic river, nor is it on the National Inventory of Rivers potentially eligible for inclusion.

Public Law 90-583 (82 Stat. 1146), 17 October 1968, Noxious Plant Control.

*In compliance.* This law provides for a control of noxious weeds on land under the control of the Federal Government. Resource objectives and development needs for management units include the control of noxious weeds through chemical, biological, and/or mechanical control methods.

Public Law 91-190 (83 Stat. 852), 1 January 1970, National Environmental Policy Act (NEPA) of 1969. *In compliance.* Section 101 of this Act establishes a national environmental policy. Section 102 requires that all Federal Agencies shall, to the fullest extent possible, use a systematic, interdisciplinary approach that integrates natural and social sciences and environmental design arts in planning and decision making; study, develop, and describe appropriate alternatives to recommend courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources; and include an Environmental Impact Statement (EIS) in every recommendation or report on proposals for major Federal actions significantly affecting the quality of the human environment. This Master Plan/EA and finding of no significant impact (FONSI) have been prepared for the proposed action. An EIS is not required.

Public Law 91-224 (84 Stat. 114), 3 April 1970, Environmental Quality Improvement Act of 1970. *In compliance.* This Act assures that each Federal department or agency conducting or supporting public works activities which affect the environment shall implement the policies established under existing law. The Corps ensures that activities at the Garrison project are in compliance with existing laws.

Public Law 91-604 (84 Stat. 1676), 31 December 1970, Clean Air Act, as amended.

*In compliance.* The purpose of this Act is to protect public health and welfare by the control of air pollution at its source, and to set forth primary and secondary National Ambient Air Quality Standards (AAQS) to establish criteria for States to attain, or maintain. Some temporary emission releases may occur during construction activities that occur under the Master Plan/EA update; however, air quality is not expected to be impacted to any measurable degree. Data from the North Dakota Department of Health's ambient air quality monitoring program indicate that pollutant concentrations are well within the Federal and State AAQS set at levels to protect human health and welfare.

Public Law 92-500 (86 Stat. 816), 18 October 1972, The Federal Water Pollution Control Act Amendments of 1972, as amended. *In compliance.* This law amends the Federal

Water Pollution Control Act and establishes a national goal of eliminating pollutant discharges into waters of the United States. Section 404 authorizes a permit program for the disposal of dredged or fill material in the Nation's waters that is to be administered by the Secretary of the Army acting through the Chief of Engineers. This law was later amended by the Clean Water Act of 1977, Public Law 95-217, to provide additional authorization to restore the Nation's water. The project is in compliance with this law. If any construction activities involve the temporary or permanent placement of dredged or

fill material into any waterbody or wetland area at Lake Sakakawea, a permit pursuant to Section 404 is required.

Public Law 92-574 (86 Stat. 1234), 27 October 1972, Noise Control Act, as amended. *In compliance.* This Act establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Federal agencies are required to limit noise emissions to within compliance levels. Noise emission levels at sites where development was proposed in the updated Garrison Master Plan/EA would increase above current levels temporarily during periods of construction; however, appropriate measures will be taken to keep the noise level within the compliance levels.

Public Law 93-205 (87 Stat. 884), 28 December 1973, Conservation, Protection, and Propagation of Endangered Species Act of 1973, as amended. *In compliance.* This law repeals the Endangered Species Conservation Act of 1969. It also directs all Federal departments/agencies to carry out programs to conserve endangered and threatened species of fish, wildlife, and plants and to preserve the habitat of these species in consultation with the Secretary of the Interior. This Act establishes a procedure for coordination, assessment, and consultation. Amendments to this Act that are relevant to the Garrison project are Public Laws 95-632 and 96-159. Corps management and construction activities proposed by the updated Master Plan/EA would have no effects on Federally listed or candidate threatened and endangered species known to exist in Garrison project areas for which the Corps is responsible. Corps activities would avoid disturbing nesting sites of piping plovers and interior least terns and would avoid impacts to the pallid sturgeon, whooping crane, gray wolf, and any reintroduced black-footed ferrets, as detailed in the Master Plan/EA.

Public Law 93-523 (88 Stat. 1660), 16 December 1974, Safe Drinking Water Act, as amended. *In compliance.* This Act amends the Public Health Service Water Act to assure that the public is provided with safe drinking water. This law states that all potable water at civil works projects will meet or exceed the minimum standards required by law. This Act was amended by the Safe Drinking Water Act Amendments of 1986, Public Law 99-339, and 1996, Public Law 104-182. The North Dakota Department of Health's Drinking Water Program works with all public water systems along Lake Sakakawea to ensure they comply with this Act.

Public Law 93-629, (88 Stat. 2148), 3 January 1975, Federal Noxious Weed Act of 1974, as amended. *In compliance.* Section 15, added to the Act in 1990, requires noxious weed control management on Federal lands and sets forth the process by which it is to be accomplished. Resource objectives and development needs for management units in the updated Master Plan/EA include the control of noxious weeds through chemical, biological, and/or mechanical control methods.

Executive Order 11988, 24 May 1977, Floodplain Management. *In compliance.* This Executive Order outlines the responsibilities of Federal agencies in the role of floodplain management. Each agency shall evaluate the potential effects of actions on flood plains and should not undertake actions that directly or indirectly induce growth in

the flood plain, unless there is no practical alternative. Agency regulations and operating procedures for licenses and permits should include provisions for evaluation and consideration of flood hazards. Construction of structures and facilities on flood plains must incorporate flood proofing and other accepted flood protection measures. Agencies shall attach appropriate use restrictions to property proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties.

Any development proposed in the updated Master Plan/EA must be in compliance with Northwestern Division (NWD) Regulation 1110-2-5, Land Development Guidance at Corps Reservoir Projects, dated April 30, 2004. This regulation establishes NWD guidance for evaluating land development proposals within Corps reservoir projects with authorized flood storage allocations. The Corps has responsibility to assure that the authorized project purposes are not compromised, that the public is not endangered, and that natural and cultural resources associated with project lands are not harmed, in accordance with applicable Federal and State regulations. The criteria and procedures for evaluation of development proposals in this regulation are to assist in meeting these responsibilities and complying with applicable laws and directives. Existing structures are exempted from this policy. However, significant modifications and/or replacement of existing structures are subject to this policy.

Executive Order 11990, 24 May 1977, Protection of Wetlands. *In compliance.* This Executive Order directs Federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. Section 2 states that agencies shall avoid undertaking or assisting in new construction located in wetlands unless there is no practical alternative. Prior to construction of any facilities proposed in the updated Garrison Dam/Lake Sakakawea Master Plan/EA, a site-specific NEPA analysis, including an assessment of potential impacts to wetlands, would be coordinated with Federal and State agencies and Tribes. If a Section 404 permit is required, coordination regarding compliance with E.O. 11990 would be accomplished prior to permit issuance.

Public Law 95-217 (91 Stat. 1566), 27 December 1977, Clean Water Act of 1977, as amended. *In compliance.* This Act amends the Federal Water Pollution Control Act of 1970 and extends the appropriations authorization. The Clean Water Act is a comprehensive Federal water pollution control program that has as its primary goal the reduction and control of the discharge of pollutants into the Nation's navigable waters. The Clean Water Act of 1977 has been amended by the Water Quality Act of 1987, Public Law 100-4. Any action involving placement of fill in waters of the U.S. at the Garrison project by the Corps, a non-Corps entity, or any individual, with the exception of certain minor activities as discussed in 33 CFR Part 323.4, would require a Section 404 authorization and Section 401 water quality certification.

Executive Order 12088, 13 October 1978, Federal Compliance with Pollution Control Standards. *In compliance.* The purpose of this Order is to ensure Federal compliance with applicable pollution control standards. Section 1-4, Pollution Control Plan, in which each agency was required to submit an annual plan for the control of environmental pollution to the Office of Management and Budget, was revoked by Executive Order

13148. The disposal of toxic substances and solid waste and the control of noise, air, and water pollution at the Garrison Dam/Lake Sakakawea project will be in accordance with this Executive Order on prevention, control, and abatement of air and water pollution at Federal Facilities.

Public Law 95-632 (92 Stat. 3751), 10 November 1978, Endangered Species Act Amendments of 1978. *In compliance.* This law amends the Endangered Species Act of 1973. Section 7 directs agencies to conduct a biological assessment to identify threatened or endangered species that may be present in the area of any proposed project. This assessment is conducted as part of a Federal agency's compliance with the requirements of Section 102 of NEPA. The Corps will conduct biological assessments on proposed projects when necessary.

Public Law 96-159 (93 Stat. 3751), 28 December 1979, Endangered Species Act of 1973, as amended. *In compliance.* This amendment expanded the Act to protect endangered plants. This amendment requires the publishing of a summary and map when proposing land as critical habitat and requires Federal agencies to ensure projects "are not likely" to jeopardize an endangered species. In addition, it authorizes all those seeking exemptions from the Act to get permanent exemptions for a project unless a biological study indicates the project would result in the extinction of a species. The Corps will ensure that any development or management activities proposed in the updated Master Plan/EA are not likely to jeopardize an endangered species. Although there are currently no threatened or endangered plants at the Garrison project, the Corps will protect any plants on project lands that are on the threatened and endangered species list in the future.

CEQ Memorandum, 10 August 1980, Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory. *Not applicable.* This memorandum states that each Federal agency shall take care to avoid or mitigate adverse effects on rivers identified in the Nationwide Inventory (45 FR 59189). No portion of the Garrison project is listed on the Nationwide Rivers Inventory.

Public Law 96-366 (94 Stat. 1322), 29 September 1980, Fish and Wildlife Conservation Act (FWCA) of 1980. *In compliance.* This law enables States to obtain funds to conduct inventories and conservation plans for nongame wildlife. It also encourages Federal departments and agencies to use their statutory and administrative authority to conserve and promote conservation in accordance with this Act. The Master Plan/EA promotes conservation at the Garrison project by including resource objectives and development needs that protect and enhance wildlife habitat and reduce erosion.

Public Law 96-510 (94 Stat. 2797), 11 December 1980, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). *Not applicable.* Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment that presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. Compliance

with this Act is required on a case-by-case basis for real estate activities such as easements, grants, etc.

Public Law 97-98 (95 Stat. 1341), 22 December 1981, Farmland Protection Policy Act. *In compliance.* This Act instructs the Department of Agriculture, in cooperation with other departments, agencies, independent commissions and other units of the Federal government, to develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses. The updated Master Plan/EA proposes planting food plots for wildlife on Corps-owned lands that were previously cultivated and does not propose taking any prime or unique farmland out of agricultural production.

Public Law 99-339 (100 Stat. 642), 19 June 1986, Safe Drinking Water Act Amendments of 1986. *In compliance.* These amendments provide further regulation regarding national primary drinking water, enforcement of these regulations, and variances and exemptions to the Act. These amendments also provide for the protection of underground sources of drinking water and provide grants to Tribes in addition to contract assistance to carry out the function of these amendments. The North Dakota Department of Health's Drinking Water Program enforces the amendments at public works systems throughout the State, including those along Lake Sakakawea.

Public Law 100-4 (101 Stat. 7), 4 February 1987, Water Quality Act of 1987. *In compliance.* This Act amends the Federal Water Pollution Control Act to not only provide for renewal of the quality of the Nation's waters but also provide construction grant amendments, standards, enforcement, permits, and licenses. This Act includes more provisions for monitoring non-point source pollution (contaminants that come from many different sources). The Corps is developing water quality management objectives for the Garrison Dam/Lake Sakakawea project that are expected to be finalized in 2007 and include intensive water quality surveys, water quality modeling, and preparation of reports that reflect current water quality conditions.

Public Law 101-233 (103 Stat. 1968), 13 December 1989, North American Wetlands Conservation Act. *In compliance.* This Act establishes the North American Wetlands Conservation Council (NAWCC, 16 U.S.C. 4403) to recommend wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). Section 9 of the Act addresses the restoration, management, and protection of wetlands and habitat for migratory birds on Federal lands. Federal agencies acquiring, managing, or disposing of Federal lands and waters are to cooperate with the USFWS to restore, protect, and enhance wetland ecosystems and other habitats for migratory birds, fish and wildlife on their lands, to the extent consistent with their missions and statutory authorities. The updated Master Plan/EA proposes no activities that involve filling in or draining wetlands. In addition, for wildlife management areas, Chapter 7 of the Master Plan/EA includes maintaining a no net loss of wetlands as a resource objective and also includes as development needs the establishment of additional wetland habitat and the maintaining/ managing of wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species.

Public Law 104-182 (110 Stat. 1613), 6 August 1996, Safe Drinking Water Act Amendments of 1996. *In compliance.* These amendments strengthen protections on tap water, improves public access to tap water contaminant information, strengthens standards to protect public health from the most significant threats to safe drinking water, and provides money that communities need to upgrade drinking water systems. The North Dakota Department of Health's Drinking Water Program enforces the amendments at public works systems throughout the State, including those along Lake Sakakawea.

Executive Order 13112, 3 February 1999, Invasive Species. *In compliance.* This Executive Order directs Federal agencies to act to prevent the introduction of or to monitor and control invasive (non-native) species, to provide for restoration of native species, to conduct research, to promote educational activities, and to exercise care in taking actions that could promote the introduction or spread of invasive species. Resource objectives and development needs for management units include the control of noxious weeds through chemical, biological, and/or mechanical control methods.

Executive Order 13148, 26 April 2000, Greening the Government Through Leadership in Environmental Management. *In compliance.* This Executive Order requires Federal agencies to develop and implement an Environmental Management System (EMS), which is a series of management processes and procedures that allow an organization to identify, mitigate, control, and reduce any environmental impacts from the organization's day-to-day business activities. Specifically, this Order requires each agency to develop an environmental policy statement; develop a plan for system implementation; complete a list of environmental aspects and impacts; establish objectives, targets, and programs; conduct EMS awareness training; complete a management review of the EMS; and implement the EMS before 31 December 2005. The Garrison Project has developed and implemented an EMS Plan, dated 31 December 2005, which addresses these requirements.

#### **2.24.3.3. Cultural Resource Statutes**

Public Law 59-209 (34 Stat. 225), 8 June 1906, The Antiquities Act. *In compliance.* This Act makes it a Federal offense to appropriate, excavate, injure, or destroy any antiquity, historic ruin, monument, or object of scientific interest located on lands owned or controlled by the United States without having permission from the Secretary of the department having jurisdiction thereof. The Corps is working to coordinate with all law enforcement agencies to establish a network of individuals that would be able to respond quickly to incidents of looting and artifact collecting.

Public Law 86-523 (74 Stat. 220), 27 June 1960, Reservoir Salvage Act, as amended. *In compliance.* This Act provides for: (1) the preservation of historical and archaeological data that might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any Federal reservoir construction projects; (2) coordination with the Secretary of the Interior whenever activities may cause loss of scientific, prehistoric, or archaeological data; and (3) expenditure of funds for recovery, protection, and data preservation. This Act was amended by Public Law 93-



291. Any construction proposed at the Garrison project connected to operation and maintenance of the facility is reviewed in advance by the Corps' Omaha District cultural resources staff. In all cases avoidance of historic properties is the preferred alternative. When such disturbance is unavoidable, suitable protection or data recovery will be implemented as required by the Act.

Public Law 89-665 (80 Stat. 915), 15 October 1966, National Historic Preservation Act (NHPA), as amended. *In compliance.* This Act states a policy of preserving, restoring, and maintaining cultural resources and requires that Federal agencies (1) take into account the effect of any undertaking on any site on or eligible for the National Register of Historic Places (NRHP); (2) afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on such undertaking; (3) nominate eligible properties to the NRHP; (4) exercise caution in the disposal and care of Federal property that might qualify for the NRHP; and (5) provide for the maintenance of Federally owned sites on the NRHP. All ground-disturbing activities proposed on Garrison project lands are coordinated in advance with the State Historic Preservation Officer (SHPO), ACHP, THPO, and any other interested parties under Section 106 of the Act.

Executive Order 11593, 13 May 1971, Protection and Enhancement of the Cultural Environment. *In compliance.* Section 2 of this Executive Order outlines the responsibilities of Federal agencies in accordance with the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, the Historic Sites Act of 1935, and the Antiquities Act of 1906. Section 3 outlines specific responsibilities of the Secretary of the Interior including review and comment upon Federal agency procedures submitted under this Order. The Lake Sakakawea Cultural Resources Management Plan describes Corps procedures for inventorying, managing, and protecting cultural resources at Lake Sakakawea.

Public Law 93-291 (88 Stat. 174), 24 May 1974, Preservation of Historical and Archeological Data. *In compliance.* This Act amends the Reservoir Salvage Act, Public Law 86-523, to provide for the preservation of historical and archaeological data (including relics and specimens), which might otherwise be lost as the result of the construction of a dam. Section 3(a) requires any Federal agency to notify the Secretary of the Interior in writing when the agency finds, or is notified in writing by an appropriate historical or archaeological authority, that its activities in connection with any Federal construction project or Federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, prehistorical or archeological data. Section 7(a) requires any Federal agency responsible for a construction project to assist/transfer to the Secretary of the Interior such funds as may be agreed upon, but not more than 1 percent of the total appropriated project costs. The costs of survey, recovery, analysis, and publication shall be considered non-reimbursable project costs. The Corps will notify the Secretary of the Interior in writing if a Corps activity may destroy significant scientific, prehistoric, or archeological data.

Public Law 95-341 (92 Stat. 469), 11 August 1978, American Indian Religious Freedom Act (AIRFA) of 1978. *In compliance.* AIRFA protects the rights of Native Americans to

exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. No proposals in the updated Garrison Master Plan/EA would adversely affect the protections offered by this Act. Access to sacred sites by Tribal members would be provided. A memorandum from the Corps' Northwestern Division dated June 7, 2004, Subject: Use of Corps Lands by Federally Recognized Tribal Members in the Northwestern Division provides guidance for access to Corps-owned lands for Tribal religious activities, including notification protocol and procedures.

Public Law 96-95 (93 Stat. 721), 31 October 1979, Archaeological Resources Protection Act (ARPA) of 1979. *In compliance.* This Act protects archaeological resources and sites that are on public and Tribal lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals. It also establishes requirements for issuance of permits by the Federal land managers to excavate or remove any archaeological resource located on public or Indian lands. All persons proposing to engage in archeological excavation on Garrison project lands are required to apply for and obtain an ARPA permit.

Public Law 101-601 (104 Stat. 3042), 16 November 1990, Native American Graves Protection and Repatriation Act (NAGPRA). *In compliance.* This Act provides for the protection of Native American and Native Hawaiian cultural items. It establishes a process for the authorized removal of human remains, funerary, sacred, and other objects of cultural patrimony from sites located on land owned or controlled by the Federal Government. NAGPRA requires Federal agencies and Federally assisted museums to return specified Native American cultural items to the Federally recognized Indian tribes or Native Hawaiian groups with which they are associated. Notification of all inadvertent discoveries of such items covered by the Act are reported to the appropriate affiliated descendant or Tribe in order of precedence as set by the Act. Any claims to such items are reviewed and the procedures to repatriate within the Act are followed.

Executive Order 12898, 11 February 1994, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *In compliance.* Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. Development and management activities proposed in the updated Master Plan/EA are not anticipated to disproportionately impact minority or low-income populations.

Executive Order 13006, 21 May 1996, Locating Federal Facilities on Historic Properties. *Not applicable.* This Executive Order requires Federal facilities, wherever operationally appropriate and economically prudent, to be located in historic properties and districts, especially those located in our central business areas. No activities under the Master Plan/EA involve the development of Federal facilities that could be located in historic properties.

Executive Order 13007, 24 May 1996, Indian Sacred Sites. *In compliance.* This Executive Order requires that agencies avoid damage to Indian sacred sites on Federal land, and avoid blocking access to such sites for traditional religious practitioners. The Federal Government gives Tribes notice when an impact to a sacred site occurs. All ground-disturbing activities proposed on Garrison project lands will continue to be coordinated in advance with the Tribes. In 2004, the Commander of the Northwestern Division issued a memorandum stating that the Corps should accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and would issue special use permits without charge, whenever allowable on Corps lands, to Tribes and Tribal members for ceremonial purposes. The memorandum also provides procedures that assist land managers with site protection as well as monitoring and investigation of any illegal activity regarding cultural resources.

Executive Order 13175, 6 November 2000, Consultation and Coordination with Indian Tribal Governments. *In compliance.* This Executive Order requires regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. Section 3 establishes policymaking criteria when formulating and implementing policies that have Tribal implications. Section 5 (a) says each agency shall have an accountable process to ensure meaningful and timely input by Tribal officials in the development of regulatory policies that have Tribal implications. Tribal representatives are represented on the steering committee and have been fully involved in the development of, and were consulted on, the Garrison Master Plan/EA.

Executive Order 13287, 3 March 2003, Preserve America. *In compliance.* This Executive Order encourages Federal agencies to recognize and manage the historic properties in their ownership as assets that can support department and agency missions while contributing to the vitality and economic well-being of the Nation's communities. This Executive Order also encourages Federal agencies to seek partnerships with State, Tribal, and local governments and the private sector to make more efficient and informed use of their historic, prehistoric, and other cultural resources for economic development and other recognized public benefits. The Corps has partnered with State, Tribal, and local governments and the private sector by forming a steering committee that has provided input on the Master Plan/EA's effects on cultural resources, including historic properties, and other public benefits.

#### **2.24.4. COOPERATIVE AGREEMENTS**

Cooperative Agreement, 1989. This cooperative agreement is between the Department of the Interior and the Department of the Army regarding waterfowl habitat conservation opportunities associated with Corps civil works projects and activities consistent with the North American Waterfowl Management Plan (NAWMP). In May 1986, the United States and Canada signed the NAWMP. The goal of this plan is to restore the Nation's waterfowl population to the same numbers as in the early 1970's. More detailed

information about the NAWMP is provided in the Management Plans section of Chapter 2 of this updated Master Plan/EA.

Memorandum of Agreement (MOA) with the North Dakota Geological Survey (NDGS), 1991. This agreement gives qualified personnel from the North Dakota Geological Survey permission to access District lands for the purpose of locating, identifying, collecting, and curating paleontological specimens. The MOA further specifies that these paleontological specimens be curated by the NDGS at the Heritage Center in Bismarck, North Dakota and labeled "Property of the Omaha District, Corps of Engineers."

NAGPRA-based Memorandum of Agreement, 1993. This agreement between the Corps' Omaha District and the North Dakota Intertribal Reinterment Committee covers the procedures for the care and proper treatment of Native American human remains on Corps-owned project lands at Bowman-Haley, Oahe, Sakakawea, and Pipestem reservoirs in North Dakota.

Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act, as amended, 2004. In September 2001, the Corps made the decision to replace the existing Programmatic Agreement (PA) for implementation of Section 106 of the NHPA, which was signed in 1993. The existing PA was an agreement between the Corps, the Nebraska, South Dakota, North Dakota and Montana State SHPO's, and the ACHP. Since the signing of the agreement, a Federal requirement came into effect that required the Corps to involve the Native American Tribes within the Missouri River Basin on the implementation of the Cultural Resources Program in the Omaha District, which is the upper Missouri River Basin. The District and the consulting parties signed this agreement on April 13, 2004. The final PA included twenty-nine signatories, including representatives from three Federal agencies, sixteen Tribal governments, one State agency, and one private organization, as well as two Tribal Historic Preservation Officers (THPO's) and four SHPO's.

### 3. SPECIAL ISSUES

#### 3.1 MOSQUITO CONTROL

More than 2,500 different species of mosquitoes are found worldwide, with about 200 species in the United States. The mosquito is the most common vector in the spread of arboviruses; however, not all mosquitoes are vectors in the transmission of arboviruses (Henke et al. 2005). Male mosquitoes feed almost exclusively on nectar and therefore do not bite. Female mosquitoes lay eggs that require a blood meal and obtain the blood by biting animals (warm- or cold-blooded) and birds. Stimuli that influence biting include a combination of carbon dioxide, temperature, moisture, smell, color and movement. Humans are seldom the first or second choice for a blood meal (Henke et al. 2005). Horses, cattle, smaller mammals, and birds are preferred. Although acquiring a blood meal is essential for egg production, both male and female mosquitoes are mainly nectar feeders.

West Nile Virus (WNV) is the most recently emerged arbovirus in North America. West Nile virus is named after the West Nile region of Uganda where it was first discovered in 1937. *Culex* species of mosquitoes are the primary vectors (Henke et al. 2005). Although WNV was common in many parts of the world, it had not been seen in the United States until late summer 1999, when it made its debut in New York. WNV then proceeded to travel westward across the continent the following year. West Nile fever can be characterized by fever, headache and rash to more serious symptoms. Although only a small percentage of people infected with WNV display symptoms, WNV can cause encephalitis (an inflammation of the brain) and meningitis (inflammation of the brain and spinal cord) in humans and animals (Henke et al. 2005).

Since 1975, the North Dakota Department of Health has monitored mosquito populations throughout the state. The North Dakota Mosquito Surveillance Program traditionally has been activated following arboviral outbreaks or flooding incidences in various locations throughout the state (Henke et al. 2005). This program was initiated in 1975 following outbreaks of western equine encephalitis and St. Louis encephalitis in the United States. In 1977, the program was officially formed under the title North Dakota Arboviral Encephalitis Surveillance Program and housed with the Division of Environmental Sanitation and Food Protection (Henke et al. 2005). This program was responsible for equine and human arbovirus surveillance until 1989.

The program was reinstated under the name North Dakota Mosquito Surveillance Program in 1994 in response to flooding of the Red River in 1993. This program was operated by the Division of Microbiology until 1997. In 2000, the North Dakota Mosquito Surveillance Program was reinstated in response to the 1999 WNV outbreak in New York (Henke et al. 2005). In 2002, North Dakota had its first confirmed human cases of WNV, as well as detectable virus through laboratory testing in birds, horses and mosquitoes.

Currently, the Corps implements a mosquito control project on more than 24,000 acres near the Williston and Trenton Indian Service areas as authorized under the Flood

Control Act of 1958 (P.L. 85-500). Activities proposed for fiscal year 2007 include aerial and hand application of a granular larvicide for mosquito control purposes. The Corps' Coastal and Hydraulic Laboratory conducted an inventory of mosquito breeding habitat on Corps lands at Williston and found that approximately 24,000 acres of mosquito breeding habitat exist near the city. Funding was initially provided only for mosquito control at Williston, but additional funding for mosquito control at the Trenton Indian Service Area has been provided since fiscal year 2002.

### **3.2. POTENTIAL TRANSFER OF GARRISON PROJECT LANDS**

During the process of updating of the Garrison Dam/Lake Sakakawea Master Plan, the U.S. Army Corps of Engineers' Omaha District was engaged in another process commonly referred to as the "potential transfer of Garrison Project lands". The potential land transfer may have an impact on the number of acres remaining under the direct management of the Corps of Engineers, Omaha District's Garrison/Lake Sakakawea Project Office. Current information on this process is available at <https://www.nwo.usace.army.mil/html/pa/pahm/land/home.htm>.

The Assistant Secretary of the Army for Civil Works (ASACW) instructed the Omaha District, pursuant to the Fort Berthold Reservation Mineral Restoration Act, Public Law 98-602, Section 206(b), and other applicable laws to assess the Garrison Project's land base and determine if there were any lands no longer needed for construction, maintenance, or operation of the project within the land area of the Fort Berthold Reservation. A three-phase process is being implemented to maximize public, state, tribal, and federal involvement in this effort.

Phase 1 resulted in determining that under the Fort Berthold Mineral Restoration Act the Corps of Engineers, acting as an agent of the Secretary of the Army, had the authority to enter into agreements with the Department of Interior to transfer lands within the exterior boundaries of the Fort Berthold Reservation, provided the lands were purchased by the government for the purpose of construction, maintenance, and operation of the Garrison Dam and Reservoir Project and that these same lands were no longer required for the reason of purchase. It is important to understand that the process to consider lands no longer needed to operate the project and administrative transfer to the Department of Interior, utilized elevation 1854 (maximum operating pool elevation) to establish acreage totals, while this Master Plan utilizes elevation 1838 base flood control elevation for acreage totals. Elevations should be identified prior to comparison of master plan and "potential land transfer of Garrison Project lands" acres.

Phase 2 consisted of three public meetings to share and gather information relevant to the proposed transfer of lands. A draft Effects Report, dated May 2006, was prepared and was made available for public comment in June 2006. A draft determination was made that approximately 24,000 acres of the Corps' Garrison Dam/Lake Sakakawea Project was eligible for transfer. Public meetings were held to discuss and gather additional comments concerning the content of the Effects Report. As of February 2007, the Corps continues to review and analyze comments in preparation for a final Effects Report.

Phase 3 will include the implementation requirements resulting from phase 2. In September 2005 an Environmental Baseline Survey of Lake Sakakawea was completed, which addressed the lands being proposed for transfer. When a final determination is made the real estate transfer packages will be prepared in support of a final title report.

As of February 2007, there was no final decision concerning the proposed transfer. Therefore, the updated Garrison Dam/Lake Sakakawea Master Plan/EA includes the lands proposed for transfer in its management discussions. If the lands are transferred, a supplement to the updated Master Plan will need to be prepared.

### **3.3. LOW POOL AND HIGH POOL MANAGEMENT ISSUES AND STRATEGIES**

#### **3.3.1. INTRODUCTION AND GENERAL DESCRIPTION OF OPERATING CONDITIONS AND POOL LEVELS**

This chapter of the management plan identifies and discusses the issues and problems that arise at the extreme ends of the reservoir pool level on land management conditions and operations of the Garrison project. High and low pool conditions create a variety of issues and challenges to standard land management practices. Recent severe fluctuations in pool elevations have required the US Army Corps of Engineers (Corps) to implement unique land management practices to minimize their impacts. The collection and documentation of critical historical data and the identification of unique challenges and strategies formulated to address land based impacts is necessary for future planning and management of these facilities.

This chapter provides general strategies for dealing with significant impacts to land management. These strategies are guidelines to assist in future planning processes; strategies identified in this plan should not be a substitute for detailed contingency plans. Contingency plans should be developed for major potential impacts. Contingency plans should be communicated with affected users as well as the general public. Environmental conditions vary from year to year, so plans will be most effective if prepared with current conditions and influencing factors.

This high and low pool management strategy analyzes pool elevations and provides strategies related to minimizing land based impacts, with emphasis on drought and flood conditions. Elevations and management protocols at “Normal Pool” provide a basis from which the high and low pool management strategies are formulated.

This management plan is organized by first providing an introduction to the overall purpose of the management plan and then by identifying the major issues that affect reservoir operations for both high and low pool levels. The following sections then describe which of the identified management issues are relevant for specific pool levels. The management plan identifies specific management zones based on pool level ranges defined in the plan. By organizing issues and strategies by zones, management direction can be targeted to the specific elevation ranges and related problems. As the reservoir

pool goes through high or low periods the land management strategies necessary for each elevation zone can be clearly anticipated and executed. The closing sections of the management plan provide the management strategies and recommendations for each of the identified elevation zones.

#### **3.3.1.1. Normal Operating Conditions**

“Normal” Operating Conditions, for the purpose of this document, has been defined as the reservoir elevation between 1838 and 1850 feet above mean sea level using the datum NAVD29 (msl). All elevations used in this management plan are referenced to msl. The range of elevations for “normal” corresponds to the average operating range of the project from the years 1967 to 1997, and accounts for approximately 58% of the project’s life (although the dam was first closed in 1953, it was not until the main stem system filled in June of 1967 that the records reflected the system operation).

Minimal impacts to project operations are expected during these conditions since routine operations and maintenance will continue. As the water level approaches the extremes of this range, however, heightened awareness of project conditions should be realized.

#### **3.3.1.2. High Pool Operating Conditions**

High Pool operating conditions are defined as the reservoir surface between elevations 1850 and 1855. The flood control pool for the Garrison Reservoir is defined as the range between elevations 1850 and 1854, with 1854 being the top of the emergency spillway gates. The historic high elevation of the pool occurred in July 1975 and was elevation 1854.8. Whenever the pool elevation exceeds 1854 water begins to flow over the emergency spillway, limiting further increases in pool elevation.

With the high pool elevations, impacts to project operations increase and the need for monitoring, maintenance, and evaluation increases. For instance, the ability to control downstream releases is reduced, the potential for damage to the dam is increased, and portions of several parks become inundated and temporarily unusable. The increased monitoring and evaluation schedule needed for the project’s structures and appurtenances can be found in the Operation and Maintenance Manual. The land management issues, elevation zone ranges, and management strategies are discussed below.

#### **3.3.1.3. Low Pool Operating Conditions**

Low Pool operating conditions are defined as the reservoir surface between elevations 1838 and 1775. The historic low of the reservoir occurred in May 2005, at elevation 1805.9. The minimum operational pool elevation for the project is 1775, which corresponds to the lowest elevation at which the Corps can complete their operational mandates, such as power generation.

The Omaha District's monthly Drought Report investigates the impacts that the drought has on cultural resources, reservoir access, municipal water intakes, and noxious weeds in the upper Missouri River Basin. The report uses monthly reservoir elevation predictions prepared by the Corps’ Northwestern Division to determine probable adverse impacts that may occur. This report is available at <https://www.nwo.usace.army.mil/drought/>.



The impacts associated with low pool elevations also increase the need for monitoring, maintenance, and evaluation. The range of land management issues is more varied and complex for the low pool elevations than the high pool elevations. These issues, elevation zone ranges, and management strategies are discussed below.

### **3.3.2. DEFINITION OF ISSUES**

#### **3.3.2.1. Reservoir Access and Recreation**

Reservoir access and recreation includes access features such as boat ramps, shoreline day-use access and control, off-road vehicle (ORV) control, and associated access roads. Additionally, issues with recreation facilities including marinas, camping areas, playgrounds, cabins, and docks are discussed.

Reservoir access facilities such as boat ramps and shoreline roads were originally constructed at several locations around the reservoir to provide access to the water for recreation. Many of the ramps have been extended, some multiple times, to various lengths and at varying elevations around the reservoir. All these facilities can be greatly affected by high and low water levels. Low reservoir levels leave some ramps high and dry while high water events can cover ramps, parking facilities, and access roads. In order to function properly, the access ramps require at least three feet of water over the lower end of the concrete ramp. Exposure of the lower ends of the ramps during low water can also contribute to undercutting and erosion problems leading to damage to the concrete. Boat ramp data provided is current as the date of this publication; facilities are continually repaired and improved. High water levels can inundate the tops of ramps and cause erosion damage or inundate access roads temporarily reducing access and increasing maintenance costs. Extensive road maintenance is needed to provide access to the water and shoreline. Hard pack gravel roads on land above high water typically remain intact; however roads below high water pool are temporary and require continual monitoring and repairs.

Ramps on the reservoir are grouped into four categories based on the agency responsible for management. The four access ramp categories are as follows:

- Category 1 - Corps built ramps that are managed and maintained by the Corps. Ramps in this category were initially built by the Corps with Operation and Maintenance funding obtained through standard budgetary processes. The Corps has direct management of these areas.
- Category 2 - Corps built ramps that are managed and maintained by other agencies. Lease agreements are entered into with Tribal, state, or local governments by the Corps to clearly identify that the Corps is not responsible for any management or maintenance.
- Category 3 - Ramps constructed using shared costs. The Corps shared ramp expenses with other agencies and these facilities are managed and maintained by another agency. The Corps has the ability to partner with an agency for the development of recreational facilities.

- Category 4 - Other agency built ramps that are managed and maintained by other agencies. These facilities were allowed to be constructed on land managed by the Corps. The Corps provided no funding nor accepts any managerial or maintenance responsibilities for these facilities.

**Table 3.3.2.1. Lake Sakakawea Boat Ramps Current as of 1/6/2006**

Lake Sakakawea Boat Ramps			
Current as of 1/6/2006			
	Category	Top	Bottom
		Elevation	Elevation
Beaver Bay (main)	4	1855	1828.1
Beaver Bay (low water - G&F)	4	1834.8	1821.9
Beaver Bay (low water - COE)	1	1828.7	1808
Beulah Bay	3	1852.5	1799
Camp of the Cross (main)	4	1852.5	n/a
Camp of the Cross (low water)	4	1819	1800
Charging Eagle Bay (main)	4	1853.8	1824.3
Charging Eagle Bay (1st low water)	4	1829.2	1810.6
Charging Eagle Bay (2nd low water)	4	1816	1806
Dakota Waters Resort	4	1853.4	1837
Dakota Waters Resort (low-water)	4	1853.7	1797
Deepwater Creek (CE)	1	1858.8	1832.9
Deepwater Creek (1st low-water)	1	1838.5	1809
Deepwater Creek (2nd low-water)	1	1820	1808
Deepwater Creek (North Side G&F)	4	1855.6	1825.8
Douglas Creek (North )	1	1854.9	1820.4
Douglas Creek (South Ramp)	1	1851.8	1818.6
Douglas Creek (low-water)	1	1831	1801
Douglas Creek (Zieglers - G&F)	4	1851.5	1820.6
Fort Stevenson (marina)	3	1855	1823
Fort Stevenson (low water)	2	1821	1790
Four Bears Park (west main)	2	1850.5	1835.4
Four Bears Park (east main)	4	1865.6	1832.5
Four Bears Park (north low water)	2	1827.2	1811
Four Bears Park (south low water)	4	1820.7	1803
Garrison Creek Cabin Site	4	1857	1802
Government Bay (main)	1	1857.2	1810
Government Bay (relocation)	1	1815	1803
Hazen Bay (main)	3	1850	1821
Hazen Bay (east)	4	1849.4	1836.5
Hazen Bay (1st low water)	4	1841.4	1816.1

Lake Sakakawea Boat Ramps			
Current as of 1/6/2006			
Hazen Bay (Walleye Bay)	4	1830.6	1810
Indian Hills (main)	4	1859.4	1820.1
Indian Hills (1st low water)	4	1826.2	1811.8
Indian Hills (2nd low water)	4	1817.6	1807
Indian Hills (3rd low water)	4	1810	1802
Lewis & Clark State Park (main)	2	1858	1823.2
Lewis & Clark State Park (low water)	2	1830.7	1817
Little Beaver (original ramp)	3	1851.4	1843.1
Little Beaver (mid bay)	4	1853.3	1829.6
Little Beaver (main lake)	3	1858.5	1818
Little Field Bay	4	1857.6	1837
Little Missouri (main)	1	1854.5	1827
Little Missouri (1st low water)	1	1839.3	1825
Little Missouri (2nd low water)	1	1835	1823
Lunds Landing (main)	4	1857.5	1834.9
Lunds Landing (1st low water)	4	1839	1827.3
Lunds Landing (2nd low water)	4	1830.5	1824.2
Lunds Landing (3rd low water)	1	1825.6	1819.2
McKenzie Bay (west ramp)	4	1851.2	1825.9
McKenzie Bay (east ramp)	4	1850.9	1796
New Town Marina	4	1853.7	1816.9
Parshall Bay (east main)	4	1851.5	1830.2
Parshall Bay (west main)	3	1859	1827.6
Parshall Bay (west primitive)	4	1850.7	1817.1
Parshall Bay (1st low water)	4	1817.8	1808.5
Pouch Point (main)	4	1854	1836.7
Pouch Point (1st low water)	4	1835	1819
Pouch Point (2nd low water)	4	1834.8	1813
Pouch Point (3rd low-water)	4	1819	1809
Reunion Bay (1st low water)	1	1836.9	1820.6
Reunion Bay (2nd low water)	1	1826.6	1808
Sakakawea State Park (main)	2	1850	1800
Sakakawea State Park (Rodeo Bay)	4	1856.1	1817.4
Sakakawea State Park (low water)	4	1807	1800
Sanish Bay (Aftem) (main)	4	1849.3	1828.4
Sanish Bay (Aftem) (low water)	4	1830.8	1807.4
Skunk Creek Rec Area (south ramp)	4	1849.4	1828.5
Skunk Creek Rec Area (main ramp)	4	1840	1806.5
Sportsmen's Centennial (main)	4	1847.6	1823.2

Lake Sakakawea Boat Ramps			
Current as of 1/6/2006			
Sportsmen's Centennial (low water)	4	1831.6	1808.5
Steinke Bay (main)	4	1862.4	1827.8
Steinke Bay (1st low water)	4	1833.1	1819.8
Steinke Bay (2nd low water)	4	1833.1	1813.4
Tobacco Garden (main)	2	1857	1835.3
Tobacco Garden (1st low water)	2	1837.8	1826.1
Tobacco Garden (2nd low water)	2	1835.5	1818
Van Hook (east)	4	1854.6	1832
Van Hook (south main)	4	1854.7	1826.2
Van Hook (north main)	4	1853.4	1824.7
Van Hook (west low water) (2)	4	1821.2	1808
Van Hook (Gull Island low-water) (2)	4	1817.8	1805
West Totten Trail (main)	4	1851.7	1827.4
White Earth Bay (main)	4	1850.9	1801
White Earth Bay (low-water)	4	1832.2	1815.2
Wolf Creek (old)	1	1853.3	1825.9
Wolf Creek (new)	1	1848.5	1819
Wolf Creek Rec Area (2nd low water)	1	1833.8	1802.5
Wolf Creek (east end)	4	1842.5	1823

Recreation use is affected by both high and low water levels presenting challenges for boats, fishermen, swimmers, water skiers, jet skiers, and campers. Impacted facilities can include boat docks, parking areas, boat ramps, sanitation facilities, picnic grounds, campsites, and swimming facilities. Recreation usage may change during low water conditions as access to the water becomes more difficult or more limited. Reduced access to the water may require users to find alternative access points which may result in overcrowding of those facilities still usable.

Marinas provide many amenities to water oriented visitors. The elevation of the water in the marina harbor determines its serviceable use. Services can include: boat ramps, boat docks, long and short term mooring facilities, fuel service, sanitation services, mechanic services, grocery, sundries, camping, swimming, and outdoor sports. The use of marinas by the boating public assists in protecting the reservoir environment by providing sanitation facilities and pick up and disposal of petroleum products.

Dock and mooring facilities must be continually adjusted to an appropriate depth to avoid damage to boats. Because sail boats and deep hull vessels require high water elevations, these types of boats are impacted first. Severe low water conditions may require the abandonment of docks and mooring facilities because the water is too far from the marina. The removal of docks restricts if not eliminates the ability for boaters to access fuel and sanitation. As facilities are removed or closed, other ancillary services are affected. Many marinas have cabins, camping facilities, restaurants, and bait shops.

These services rely primarily on the patronage of boaters. The closure of slip and dock services will dramatically affect the revenue of the entire marina.

Shoreline day use and ORV use are popular on the reservoir. High pool conditions eliminate the opportunities for this type of recreation because of the loss of shoreline due to inundation. Low pool conditions provide opportunities for unrestricted and uncontrolled access to shorelines and can result in severe damage to other reservoir resources such as threatened or endangered species (T&E Species) and cultural resources. The extensive areas of bare shoreline exposed by low pool conditions provide a tempting draw for ORV use.

Cabin sites, docks, campgrounds, domestic waterlines, parking areas, and playgrounds are all affected by high and low pool conditions. Many of these facilities are inundated during extreme high water events. These same facilities that are conveniently near a reservoir access point during normal pool conditions may be far away from the reservoir access during periods of low water.

#### **3.3.2.2. Invasive Species**

Several invasive plant species (noxious weeds) thrive in low pool elevation conditions. Newly exposed shoreline provides ideal habitat for invasive species to grow and spread quickly. Invasive species tend to be colonizers that specialize in colonizing and thriving in disturbed environments such as the newly exposed reservoir shoreline. As noxious weeds spread quickly on the exposed soils and gain a foothold they can then more easily spread to adjacent farms and ranches. Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*) are the primary threats on the exposed shorelines of Garrison Reservoir. Salt cedar (*Tamarix ramosissima*, *Tamarix chinensis*, and *Tamarix parviflora*) also poses an immediate threat to the natural resources around the reservoir but is a more constant threat throughout the full range of reservoir levels—high, low, and normal.

#### **3.3.2.3. Cultural and Historic Resources**

Cultural resource sites are at risk of being adversely affected by environmental and human factors any time the water level fluctuates. Cultural resource site density along the Missouri River is high with sites located at all pool level elevations. Pre-historic and historic sites are located along the original river channel and on the surrounding bluffs and plains. Nearly all sites are affected by the changing water elevations but this issue is most critical at the extreme high and low water elevations. Sites covered by water during normal pool operating levels are potentially affected by low water conditions because they may be exposed and subject to wind erosion or looting. Sites above the normal pool operating levels are affected by high water conditions because they are newly exposed to erosive wave action and can be damaged directly or exposed once the water level drops back to normal operating conditions. Regardless of the operating condition, the National Historic Preservation Act requires that archeological sites that are eligible or potentially eligible for listing on the National Register of Historic Places be preserved and protected from adverse effects.

#### **3.3.2.4. Municipal Intakes**

Municipal water supply intakes are threatened by the receding of the reservoir pool during low water conditions. The reservoir provides public drinking water to ten communities (approximately 40,000 individuals) and serves a number of individual homes. The reservoir level required for a given intake structure to operate properly varies. Refer to the Basin Wide Intake Study for information specific to a given intake. Exposure of municipal water intake structures can result in shut down of the facility, collapse of the intake pipes due to erosion of adjacent banks, and turbidity issues with the water supply.

#### **3.3.2.5. Threatened and Endangered Species**

The foraging and nesting activities of two endangered bird species are impacted by high and low pool elevation changes. The Interior Least Tern (*Sterna antillarum athalassos*) and Piping Plover (*Charadrius melodus*) are two shorebirds that feed and raise their young on the shores of the Missouri River and reservoir beaches. The Least Tern is a pale grey swallow sized bird that tends to nest west of the reservoir on sand bars in riverine conditions. Terns were recently observed making one-time use of a sand bar south of Williston within the reservoir (Pavelka, 2006).

The reservoir area provides habitat primarily for the Piping Plover, a sandy brown robin-sized shorebird. A steady drop in reservoir elevations provides for an optimum increase in potential nesting habitat for the Piping Plover. The Piping Plover prefers the newly exposed open shorelines for nesting that are provided by a steady drop in the reservoir elevation. However, this habitat is short lived as within one to two years vegetation will encroach and colonize the open shores and eliminate the open habitat. The additional vegetative growth that accompanies lower elevations also decreases their critical foraging areas and increases opportunities for predators. Changes in foraging habits can adversely affect the survival of chicks and adult birds. High grass and weeds along the shoreline will discourage Piping Plovers away from ideal feeding locations. Vegetation also provides cover for predators such as snakes, raccoons, and skunks to destroy nests. Nests can be concentrated on ideal sandy soil but in limited areas, endangering a large percentage of the population by allowing predators easy access.

The transition to low pool conditions has the potential of providing optimum conditions for these endangered species. As the reservoir level drops new habitat is continually exposed. If low pool elevations persist however, the habitat will soon be overgrown. Year to year the more important factor for the endangered bird species is the short-term rise and fall of the reservoir pool. For example, from 1998 to 2005 as the reservoir steadily lowered, the Piping Plover numbers nesting in the area steadily increased to over 700 birds per year. In 2006 however, as the reservoir level continued to drop overall, the reservoir pool was over eight feet higher in April than during the previous nesting season in April of 2005. The number of individual birds nesting in 2005 dropped to 400 (Pavelka, 2006).

Higher water levels pose the greatest issues for the endangered birds around the reservoir because nearly all of the prime habitat areas would be inundated by the rising water. As reservoir elevations exceed 1850 the open expanses of shoreline begin to disappear.

During the peak high water elevations experienced in 1997 only three birds were found nesting along the reservoir (Pavelka, 2006).

One additional endangered species resides in the reservoir. The pallid sturgeon (*Scaphirhynchus albus*) is a bottom dwelling fish that prefers large, free-flowing, warm water, turbid habitat with a vast array of physical habitat conditions that are in a constant state of change. The low water pool conditions may have beneficial effects for pallid sturgeon in that riverine habitats are exposed in the upper end of the reservoir. These areas would provide habitat conditions that were not previously available under full reservoir conditions. Additionally, the sturgeon depend on spring runoff conditions to trigger their spawning migrations and these conditions would be more prevalent in the upper reservoir with low pool elevations (Holm, 2006).

#### **3.3.2.6. Fish Hatchery Rearing Ponds**

The fish hatchery rearing ponds are located below the dam and are used for raising hatchery fish. The ponds are managed by the United States Fish and Wildlife Service (USFWS). The rearing ponds are normally supplied with water from the spillway pond. During times of very low water the reservoir level can drop below the elevation of the spillway crest, elevation 1825, cutting off the supply of water to the spillway pond. During times of low water the rearing pond operation is greatly impacted and water has to be pumped exclusively from an existing penstock tap.

#### **3.3.2.7. Bank Erosion**

Bank erosion caused by wave and wind action is an issue of concern at all reservoir levels. But it becomes a particular concern at the extremes of the pool elevations as areas that are not often subjected to wave action are exposed to the wind and waves. Essential facilities such as roads, ramps, and docks or areas of particular safety concern such as unstable banks near recreation areas are of first importance. Erosion is also a concern in regards to cultural issues and municipal water intakes. Erosion can expose or damage cultural or historic resources, cause turbidity that can clog water intakes and impact water treatment, or damage water intake structures. Bank erosion during high pool elevations could also affect identification of property boundaries.

#### **3.3.2.8. Irrigation Intakes**

Irrigation intakes are impacted primarily by low water levels. These intakes however, are the responsibility of the individual owners. The owners generally extend their lines to follow the water down into the reservoir as the pool level recedes. This is an issue for both land managers and owners to be aware of as reservoir levels rise and fall. Contingency plans for pump relocation, with input from both parties, are advantageous to facilitate emergency actions.

#### **3.3.2.9. Coldwater Fish Habitat**

Coldwater fish habitat is important for the Chinook salmon (*Oncorhynchus tshawytscha*) and rainbow smelt (*Osmerus mordax*) fisheries on the reservoir. Chinook salmon are a stocked species in the reservoir and are an important game fish. The rainbow smelt are important as a prey base for walleye and most other game fish on the reservoir.

A coldwater habitat is maintained within the reservoir and the Corps has undertaken efforts to protect and enhance this habitat by changing the way they operate the intake structures at the dam. On two of the five intake structures marine grade plywood has been added to the lower end of the intakes. When those two intakes are in operation the water is released from the reservoir only from the top of the water column, the location of the warmest water. By operating the intakes so they only allow water in at the top of the intake structure, the coldwater that collects at the lowest level of the reservoir remains undisturbed and provides this important habitat.

The coldwater habitat is impacted by low pool conditions because the lowering of the pool elevation tends to reduce the coldwater layers and the extent of the coldwater to the area nearest the dam. With this reduction of the habitat comes increased predation, crowding of the fish, oxygen depletion in the water, an increase in susceptibility to disease, and reduced spawning success. The stress on the fishery and reduced spawning success impacts sport fishing on the reservoir. The reduction of smelt populations seriously reduces the forage for walleye, which is one of the most important sport fishing species on the reservoir (Holm, 2006).

#### **3.3.2.10. Safety and Health Hazards**

High and low pool elevations present a variety of safety and health hazards to all users of the reservoir. Hazards such as sandbars, stumps, logs, and trees may become exposed or lie just under the surface of the water during low and high pool elevations in areas that pose no hazard with normal pool elevations. As the water level decreases within the reservoir, some areas where trees flourished still retain stumps or logs that have floated into the reservoir may become lodged on the bottom and present an unforeseen hazard to reservoir users. Blowing sand and dust from newly exposed shorelines and slopes can also pose safety risks with low pool elevations. During high water events trees at the reservoir edge become submerged along with fences and other structures. These can all pose dangerous underwater hazards for recreational users.

Additionally, as the water levels go down in the reservoir neighboring farmers often have to chase the water level down with fences to keep livestock contained. These “tag” fences then need to be removed promptly when water levels increase to prevent them from becoming a hazard as the water level rises over them.

#### **3.3.2.11. Facility Maintenance**

Low pool elevations do provide for the opportunity to carry out needed maintenance of facilities and shorelines. As facilities are exposed at lower reservoir levels maintenance crews have easier access for repair and reconstruction of docks, ramps, erosion control structures, and other facilities. Areas of erosion on the shoreline can be repaired and cultural resources can be secured.

### **3.3.3. ELEVATION ZONES ISSUES AND OPPORTUNITIES**

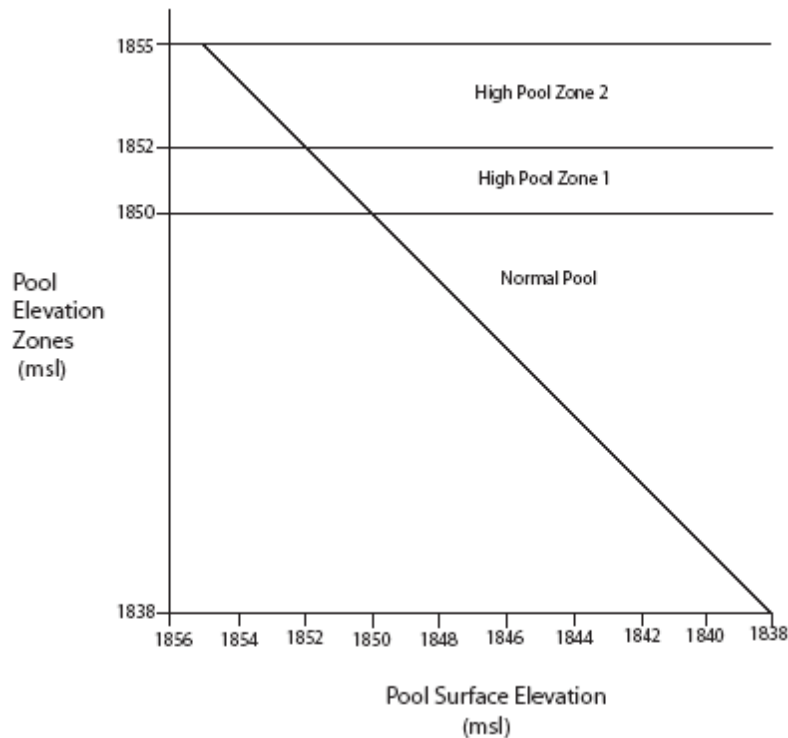
#### **3.3.3.1. High Water Operating Conditions—Elevation 1850 to 1855**

The flood control pool for the Garrison Project is designated between the elevations of 1850 and 1854, which is the top of the emergency spillway gates. The highest historical



elevation of the pool occurred in July 1975 and was at elevation 1854.8. At elevation 1854 the water spills and there is no additional storage capability. Figure 3.3.3.1. below illustrates the two high water pool elevation zones. These elevation zones are discussed in detail below.

**Figure 3.3.3.1. – High Pool Elevation Zones**



### **3.3.3.1.1. High Pool Elevation Zone 1 - 1850 to 1852**

#### **3.3.3.1.1.1. Issues**

Reservoir access ramps– As the reservoir level exceeds the normal operating range above elevation 1850 up to elevation 1852, all but two of the low water access ramps are closed and eleven other boat access ramps are impacted or must be closed. The eleven ramps affected are:

Ramp	Closure Elevation	Comments
American Legion	1851	
Beaver Bay main ramp	1851	Ramp usable, one access road inundated.
Dakota Waters low water	1850	Ramp usable, road damage from wind and wave action.
Four Bears Park west main ramp	1850	
Hazen Bay east ramp	1850	Access road inundated.
Hazen Bay main ramp	1850	Ramp usable, road damage from wind and wave action.
Little Beaver	1850	Ramp usable, vulnerable to wave action damage.
Four Bears Park west main ramp	1850	
Skunk Creek	1850	
Sportsman Centennial Park	1848	
Wolf Creek	1849	

Reservoir access recreation – Other recreation facilities are also impacted as the reservoir level rises above the 1850 elevation including eleven facilities closed or partially closed. These facilities include campsites, swimming areas, playgrounds, cabin sites, and parking areas. The eleven specific sites affected are:

Site	Elevation	Impacts/Comments
Dakota Waters	1851	Playground inundated.
Douglas Creek	1851	Five campsites inundated.
Ft. Stevenson Marina	1851	Swimming beach closed.
Little Missouri River	1851	One road inundated.
McKenzie Bay (west ramp)	1851	Playground inundated.
New Town Marina	1850	Some trailers may be inundated.
Parshall Bay (west ramp)	1850	Road on west side of recreation area inundated.
Sakakawea State Park	1851	Swimming beach closed.
Sportsman Centennial Park	1851	Three campsites inundated.
Wolf Creek	1850	Parking lot and five to ten camp sites inundated.
Wolf Creek	1851	Additional fifteen to twenty campsites inundated.

Cultural and historic resources – Wave action may endanger sites that are currently intact. Refer to the Cultural Resources Management Plan (CRMP) for more specific details.

Erosion problems – Exposed cliffs and banks above the normal operating pool experience erosion problems. Additionally, private lands adjacent to the reservoir begin to be inundated at around elevation 1850. This causes erosion problems and can potentially damage fences and crops or disrupt livestock.

Hazards – Around the edges of the reservoir inundated fences, trees, logs, and other structures begin to present safety hazards for recreation users.

### 3.3.3.1.1.2. Opportunities

Invasive Species – The high pool elevation does provide some benefit by drowning out and reducing some of the invasive species growing on the shoreline of the reservoir.

### 3.3.3.1.2. High Pool Elevation Zone 2 - 1852 to 1855

#### 3.3.3.1.2.1. Issues

Reservoir access ramps – As the reservoir level rises between elevations 1852 and 1854 all of the low water access ramps are closed and four additional main ramps are closed. The four ramps affected are:

Ramp	Closure Elevation	Comments
Douglas Creek (G&F) ramp	1852	
Hazen Bay east ramp	1852	
Little Beaver	1852	Parking lot flooded
White Earth Bay main ramp	1852	Some minor access roads are closed

Reservoir access recreation – Many other recreational facilities are also affected when the reservoir level rises above elevation 1852 with an additional eleven facilities closed or partially closed. These facilities include campsites, cabins, roads, and a water plant. The affected facilities are:

Site	Elevation	Impacts/Comments
Antelope Creek	1853	One third of recreation area unusable
Beaver Bay	1853	Camping area has four sites inundated
Beulah Bay	1853	Three primitive camp sites inundated
Douglas Creek - Main Ramp	1852	Ten campsites inundated
Four Bears - Main Ramp	1852	Minor tertiary access roads closed
Hazen Bay – East Ramp	1852	The entire east camping area is unusable due to access roads being inundated
New Town Marina	1852	One access road closed
Sportsman Centennial Park	1853	15 camp sites inundated
Tobacco Gardens - Main Ramp	1852	Minor tertiary access roads closed
Van Hook - New Ramp	1852	Lower road below the concession stand is inundated
White Earth Bay – Main Ramp	1853	Nearly two-thirds of the recreation area closed

Cultural and historic resources – Wave action may endanger sites that are currently intact. Please refer to the Omaha District’s Cultural Resources Management Plan (CRMP) for more specific details.

Erosion problems – Exposed cliffs and banks above the normal operating pool experience erosion problems. Erosion problems on private lands adjacent to the reservoir expand, as does potential for damage to fences and crops and disruption of livestock.

Hazards – Around the edges of the reservoir inundated fences, trees, logs, and other structures present safety hazards for recreation users.

Flood storage – The high pool elevation eliminates the capability for flood storage.

### **3.3.3.1.2.2. Opportunities**

Invasive Species – The high pool elevation does provide some benefit by drowning out and reducing some of the invasive species growing on the shoreline of the reservoir.

### **3.3.3.2. Optimum (Normal) Operating Conditions—Elevation 1838 to 1850**

Between elevations 1838 and 1850 the reservoir pool is at what is classified as normal operating conditions. The majority of the recreational and other facilities are designed to operate within this elevation range. Of the 35 access areas on the reservoir, 34 have operating and accessible boat ramps. Reunion Bay is not operating because it is a low water facility only. Of the 90 total ramps on the reservoir, 48, mostly main access ramps, are operating while 42 mostly low water ramps, are inundated at the extreme low end of the normal operating range.

At normal pool elevations there continue to be issues with erosion, dust and other hazards, cultural and historic resources, invasive species, and T&E species, but to a lesser degree. These issues are dealt with under the normal operating procedures of the reservoir and are discussed in detail in the relevant sections of the Master Plan / Operating Management Plan.

#### **3.3.3.2.1. Issues**

Cultural and historic resources – Wave action within the normal operating conditions range may endanger sites that are currently intact. Refer to the CRMP for more specific details.

Erosion problems – Exposed cliffs and banks within the normal operating pool do experience erosion problems.

Hazards – Trees, stumps, and logs may present a safety hazards for recreation users even at normal pool elevations. Blowing dust and sand is a potential safety hazard at normal pool elevations in areas where open shoreline is common due to pool level fluctuations that occur with normal operation.

Invasive species – Invasive species may present problems during normal pool elevations in areas where open shoreline is common due to pool level fluctuations that occur with normal operation.

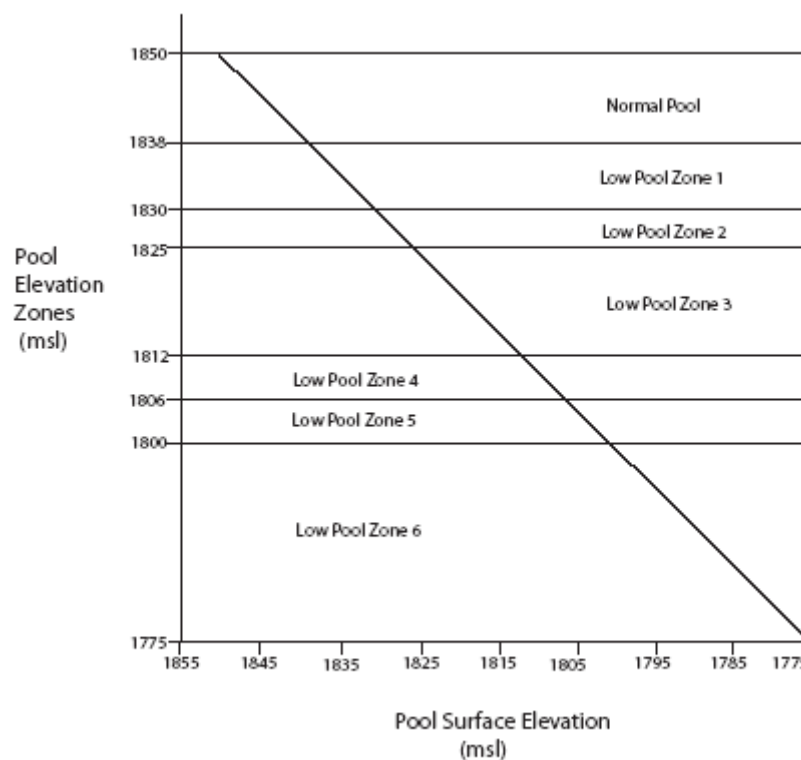
### 3.3.3.2.1. Opportunities

T&E Species – The normal fluctuations of the reservoir pool provide shoreline access for nesting birds.

### 3.3.3.3. Low Water Operating Conditions—Elevation 1838 to 1775

Low pool operating conditions begin at elevation 1838. The reservoir minimum operational pool elevation is 1775, which corresponds to the lowest elevation at which the Corps can complete their operational mandates. The lowest historical elevation of the pool occurred in May 2005, at elevation 1805.9. Figure 3.3.3.3. below illustrates the six low water pool elevation zones. These elevation zones are discussed in detail below.

**Figure 3.3.3.3. Low Pool Elevation Zones**



### 3.3.3.3.1. Low Pool Elevation Zone 1 - 1838 to 1830

#### 3.3.3.3.1.1. Issues

Reservoir access ramps – As the reservoir level drops from elevation 1838 to 1830, 17 access ramps become unusable. However, 13 low water ramps come on line, leaving 50 usable ramps at 32 of the 35 access areas. Four Bears and Little Field Bay access areas no longer have working boat ramps within this elevation zone but Reunion Bay does come on line. In order to be considered usable the ramps must be accessible and have at least three feet of water over the lowest portion of the ramp. The 17 access ramps closed are:

<b>Ramp</b>	<b>Ramp Bottom Elevation</b>	<b>Comments</b>
Beaver Bay main ramp	1828.1	
Camp of the Cross main ramp	1830	
Dakota Waters Resort main ramp	1837	
Deepwater Creek (CE) Main Ramp	1832.9	
Four Bears Park West Main Ramp	1835.4	
Four Bears Park East Main Ramp	1832.5	
Hazen Bay East Ramp	1836.5	
Little Beaver Original Ramp	1843.1	Unusable at the low end of the normal pool elevation range
Little Beaver Mid-bay Ramp	1829.6	
Little Field Bay	1837.	
Lunds Landing (main) ramp	1834.9	
Parshall Bay (east main) ramp	1830.2	
Pouch Point (main) ramp	1836.7	
Sanish Bay (Aftem) main ramp	1828.4	
Skunk Creek Recreation Area (south ramp)	1828.5	
Tobacco Garden (main) ramp	1835.3	
Van Hook (east) ramp	1832	

The 13 low water ramps that become available within this elevation zone are:

Site	Ramp Top Elevation
Beaver Bay Low Water (G&F) Ramp	1834.8
Little Missouri Second Low Water Ramp	1835
Lunds Landing Second Low Water Ramp	1830.5
Pouch Point First Low Water Ramp	1835
Pouch Point Second Low Water Ramp	1834.8
Reunion Bay First Low Water Ramp	1836.9
Sportsmen's Centennial Low Water Ramp	1831.6
Steinke Bay First Low Water Ramp	1833.1
Steinke Bay Second Low Water Ramp	1833.1
Tobacco Garden First Low Water Ramp	1837.8
Tobacco Garden Second Low Water Ramp	1835.5
White Earth Bay Low Water Ramp	1832.2
Wolf Creek Recreation Area Second Low Water Ramp	1833.8

The two access areas that are no longer usable within this elevation zone are:

- Four Bears
- Little Field Bay

Invasive species – As the reservoir elevation declines, the area of land susceptible to overgrowth by invasive species increases. The “land-clearing” action induced by the falling reservoir creates optimal conditions for the germination of weeds. Proactive measures, including close coordination with local weed boards, should continue in an effort to control weeds in the highest priority areas.

As the reservoir continues to fall, the issue with weeds becomes exacerbated as the areas exposed continue to grow. Not only is control of the new “exposure” necessary, eradication of the weeds that have previously become established is desired. This creates an enormous burden in terms of both manpower and monetary resources.

Cultural and historic resources - For this elevation zone, cultural and historic resources begin to be affected by low pool conditions. However, due to the sensitive nature of the cultural and historic resource sites, it is not possible to include specific elevations, data, or other information for the sites. Refer to the CRMP for more specific details.

Irrigation intakes – This is an issue for all Low Pool Elevation Zones. As the reservoir level falls irrigators have to chase the water with their intake structures.

Erosion problems - Wave action may induce damage to shorelines, structures, and other facilities. Geographic Information System mapping and other data processing activities are ongoing.

Hazards – Blowing dust begins to become more of an issue as larger expanses of open shoreline are exposed with the drop in water level. Areas particularly at risk are those close to population centers and popular recreation areas.

Hazards such as stumps, logs, mudflats, sand bars, and shallow water also become more of a hazard within this elevation zone. At low water there is more free flowing river in the Williston area, which can pose hazards for recreational users.

#### **3.3.3.3.1.2. Opportunities**

Maintenance – Low water levels provide opportunities for conducting maintenance on reservoir facilities as areas usually underwater become exposed. Activities such as dredging and shoreline stabilization may be easier to complete than at normal pool elevations. There are also opportunities for photo documentation of problem areas and hazards.

Wildlife benefits – The decreasing water elevation may provide some benefit for wildlife including nesting opportunities for T&E Species—particularly in the first few years of the elevation drop. In addition, moose have recently moved into habitat on exposed islands within this elevation zone in the Williston area.

Cultural resources – There may be opportunities to conduct cultural resource surveys in areas of newly exposed shoreline. The lower pool elevations may also provide an opportunity for the installation of protective measures for sensitive sites.

Recreation – There may be opportunities for identifying locations for controlled ORV access and recreation. These areas will have to be carefully selected for ease of access, minimization of conflict with other users and resources, and ability of the Corps to easily control and monitor the area.

Grazing – As the water level drops over a period of years and vegetation becomes established on the new shoreline there may be more opportunity for grazing on the exposed shoreline adjacent to existing grazing parcels. Grazing should be monitored closely and rangeland evaluated to assure resources are not adversely impacted. Overgrazing can reduce the value of vegetation for wildlife habitat, and also for fish habitat after lake levels rise and the area is inundated once again.

#### **3.3.3.3.2. Low Pool Elevation Zone 2 - 1830 to 1825**

##### **3.3.3.3.2.1. Issues**

Reservoir access – As the reservoir level drops between elevations 1830 and 1825, an additional 20 access ramps become unusable and ten low water ramps come on line, leaving 40 usable ramps. Six additional access areas lose all of their operable ramps in this elevation zone but Four Bears and Sanish Bay come back on line leaving 28 of the 35 access areas with operable ramps down to the 1825 level. Additionally, private cabins begin to have dock access problems at elevation 1830 and below. The 20 access ramps closed within this elevation zone are:



<b>Ramp</b>	<b>Ramp Bottom Elevation</b>	<b>Comments</b>
Camp of the Cross main ramp		No data available for ramp bottom elevation
Charging Eagle Bay main ramp	1824.5	
Deepwater Creek north side G&F ramp	1825.8	
Fort Stevenson marina ramp	1823	
Lewis and Clark State Park main ramp	1823.2	
Little Missouri main ramp	1827	
Little Missouri first low water ramp	1825	
Little Missouri second low water ramp	1823	
Lunds Landing first low water ramp	1827.3	
Lunds Landing second low water ramp	1824.2	
McKenzie Bay west ramp	1825.9	
Parshall Bay west main ramp	1827.6	
Sportsmen's Centennial main ramp	1823.2	
Steinke Bay main ramp	1827.8	
Tobacco Garden first low water ramp	1826.1	
Van Hook south main ramp	1826.2	
Van Hook north main ramp	1824.7	
West Totten Trail main ramp	1827.4	
Wolf Creek (old) ramp	1825.9	
Wolf Creek east end ramp	1823	

The ten low water ramps that become available within this elevation zone are:

<b>Site</b>	<b>Ramp Top Elevation</b>
Beaver Bay low water (COE) ramp	1828.7
Charging Eagle first low water ramp	1829.2
Douglas Creek low water ramp	1831
Four Bears Park north low water ramp	1827.2
Hazen Bay (Walleye Bay) ramp	1830.6
Indian Hills first low water ramp	1826.2
Lewis and Clark State Park low water ramp	1830.7
Lunds Landing third low water ramp	1825.6
Reunion Bay second low water ramp	1826.6
Sanish Bay (Aftem) low water ramp	1830.8

The six new access areas that are no longer usable within this elevation zone are:

- Camp of the Cross
- Fort Stevenson
- Little Missouri
- Van Hook
- West Totten Trail
- Wolf Creek (east end)

Invasive species – As the reservoir elevation declines, the area of land susceptible to overgrowth by invasive species increases. The “land-clearing” action induced by the falling reservoir creates optimal conditions for the germination of weeds. Proactive measures, including close coordination with local weed boards, should continue in an effort to control weeds in the highest priority areas.

As the reservoir continues to fall, the issue with weeds becomes exacerbated as the areas exposed continue to grow. Not only is control of the new “exposure” necessary, eradication of the weeds that have previously become established is desired. This creates an enormous burden in terms of both manpower and monetary resources.

Cultural and historic resources - For this elevation zone, cultural and historic resources continue to be affected by low pool conditions. However, due to the sensitive nature of the cultural and historic resource sites, it is not possible to include specific elevations, data, or other information for the sites. Refer to the CRMP for more specific details.

Irrigation intakes – This is an issue for all Low Pool Elevation Zones. As the reservoir level falls irrigators have to chase the water with their intake structures.

Erosion problems - Wave action may induce damage to shorelines, structures, and other facilities. Geographic Information System mapping and other data processing activities are ongoing.

Hazards – Blowing dust begins to become more of an issue as larger expanses of open shoreline are exposed with the drop in water level. Areas particularly at risk are those close to population centers and popular recreation areas. Hazards such as stumps, logs, mudflats, sand bars, and shallow water are a risk within this elevation zone.

#### **3.3.3.3.2.2. Opportunities**

Maintenance – Low water levels provide opportunities for conducting maintenance on reservoir facilities as areas usually under water become exposed. Activities such as dredging and shoreline stabilization may be easier to complete than at normal pool elevations. There are also opportunities for photo documentation of problem areas and hazards.

Wildlife benefits – The decreasing water elevation may provide some benefit for wildlife including nesting opportunities for T&E Species—particularly in the first few years of the elevation drop.

Cultural resources – There may be opportunities to conduct cultural resource surveys in areas of newly exposed shoreline. The lower pool elevations may also provide an opportunity for the installation of protective measures for sensitive sites.

Recreation – There may be opportunities for identifying locations for controlled ORV access and recreation. These areas will have to be carefully selected for ease of access, minimization of conflict with other users and resources, and ability of the Corps to easily control and monitor the area.

Grazing – As the water level drops over a period of years and vegetation becomes established on the new shoreline there may be more opportunity for grazing on the exposed shoreline adjacent to existing grazing parcels. Grazing should be monitored closely and rangeland evaluated to assure resources are not adversely impacted. Overgrazing can reduce the value of vegetation for wildlife habitat, and also for fish habitat after lake levels rise and the area is inundated once again.

### **3.3.3.3.3. Low Pool Elevation Zone 3 - 1825 to 1812**

#### **3.3.3.3.3.1. Issues**

Reservoir access – As the reservoir level drops between elevations 1825 and 1812, an additional 26 access ramps become unusable and 12 low water ramps come on line, leaving 26 usable ramps. Eight additional access areas lose all usable ramps within this elevation zone. Three access areas come back on line as low water ramps are exposed leaving 23 of the 35 access areas with operable ramps. The 26 access ramps closed within this elevation zone are:

<b>Ramp</b>	<b>Ramp Bottom Elevation</b>
Beaver Bay low water (G&F) ramp	1821.9
Charging Eagle Bay low water ramp	1810.6
Douglas Creek north ramp	1820.4
Douglas Creek south ramp	1818.6
Douglas Creek (Zieglers – G&F) ramp	1820.6
Four Bears Park north low water ramp	1811
Government Bay main ramp	1810
Hazen Bay main ramp	1821
Hazen Bay first low water ramp	1816.1
Hazen Bay, Walleye Bay ramp	1808
Indian Hills main ramp	1820.1
Indian Hills first low water ramp	1811.8
Lewis and Clark State Park low water ramp	1817
Little Beaver (main lake) ramp	1818
Lunds Landing third low water ramp	1819.2

New Town Marina main ramp	1816.9
Parshall Bay (west primitive) ramp	1817.1
Pouch Point first low water ramp	1819
Pouch Point second low water ramp	1813
Reunion Bay first low water ramp	1820.6
Sakakawea State Park (Rodeo Bay) ramp	1817.4
Steinke Bay first low water ramp	1819.8
Steinke Bay second low water ramp	1813.4
Tobacco Garden second low water ramp	1818
White Earth Bay low water ramp	1815.2
Wolf Creek (new) ramp	1819

The 12 low water ramps that become available within this elevation zone are:

Site	Ramp Top Elevation
Camp of the Cross low water ramp	1819
Deepwater Creek second low water ramp	1820
Fort Stevenson low water ramp	1821
Four Bears Park south low water ramp	1820.7
Government Bay (relocation) ramp	1815
Indian Hills second low water ramp	1817.6
New Town Marina first low water ramp	1819
New Town Marina first low water ramp and second low water ramp	1819
Parshall Bay first low water ramp	1817.8
Pouch Point third low water ramp	1819
Van Hook west low water ramp	1821.2
Van Hook Gull Island low water ramp	1817.8

The eight new access areas that are no longer usable within this elevation zone are:

- Charging Eagle Bay
- Douglas Creek Zieglers – G&F
- Hazen Bay
- Lewis and Clark State Park
- Little Beaver
- Lunds Landing
- Steinke Bay
- Tobacco Garden

The three access areas that come back on line with low water ramps within this elevation zone are:

- Camp of the Cross
- Fort Stevenson
- Van Hook

Invasive species – As the reservoir elevation declines, the area of land susceptible to overgrowth by invasive species increases. The “land-clearing” action induced by the falling reservoir creates optimal conditions for the germination of weeds. Proactive measures, including close coordination with local weed boards, should continue in an effort to control weeds in the highest priority areas.

As the reservoir continues to fall, the issue with weeds becomes exacerbated as the areas exposed continue to grow. Not only is control of the new “exposure” necessary, eradication of the weeds that have previously become established is desired. This creates an enormous burden in terms of both manpower and monetary resources.

Cultural and historic resources - For this elevation zone, cultural and historic resources continue to be affected by low pool conditions. However, due to the sensitive nature of the cultural and historic resource sites, it is not possible to include specific elevations, data, or other information for the sites. Refer to the CRMP for more specific details.

Fish hatchery rearing ponds – The spillway gates become unusable for supplying water to the hatchery rearing ponds below elevation 1825, which is the top of the spillway crest. There is no access to a direct water supply for the hatchery rearing ponds when the reservoir elevation drops below elevation 1825. At this elevation alternative means of water supply must be set-up or the ponds shut down.

Coldwater fish habitat - Maintenance of coldwater fish habitat becomes an issue at elevation 1825. At this elevation the reservoir pool begins collapsing the coldwater pool and the associated negative impacts begin.

Irrigation intakes – This is an issue for all Low Pool Elevation Zones. As the reservoir level falls irrigators have to chase the water with their intake structures.

Erosion problems - Wave action may induce damage to shorelines, structures, and other facilities. Geographic Information System mapping and other data processing activities are ongoing.

Hazards – Blowing dust begins to become more of an issue as larger expanses of open shoreline are exposed with the drop in water level. Areas particularly at risk are those close to population centers and popular recreation areas. Hazards such as stumps, logs, mudflats, sand bars, and shallow water are a risk within this elevation zone.

#### **3.3.3.3.2. Opportunities**

Maintenance – Low water levels provide opportunities for conducting maintenance on reservoir facilities as areas usually under water become exposed. Activities such as dredging and shoreline stabilization may be easier to complete than at normal pool elevations. There are also opportunities for photo documentation of problem areas and hazards.

Wildlife benefits – The decreasing water elevation may provide some benefit for wildlife including nesting opportunities for T&E Species—particularly in the first few years of the elevation drop.

Cultural resources – There may be opportunities to conduct cultural resource surveys in areas of newly exposed shoreline. The lower pool elevations may also provide an opportunity for the installation of protective measures for sensitive sites.

Recreation – There may be opportunities for identifying locations for controlled ORV access and recreation. These areas will have to be carefully selected for ease of access, minimization of conflict with other users and resources, and ability of the Corps to easily control and monitor the area.

Grazing – As the water level drops over a period of years and vegetation becomes established on the new shoreline there may be more opportunity for grazing on the exposed shoreline adjacent to existing grazing parcels. Grazing should be monitored closely and rangeland evaluated to assure resources are not adversely impacted. Overgrazing can reduce the value of vegetation for wildlife habitat, and also for fish habitat after lake levels rise and the area is inundated once again.

#### **3.3.3.3.4. Low Pool Elevation Zone 4 - 1812 to 1806**

##### **3.3.3.3.4.1. Issues**

Reservoir access – As the reservoir level drops between elevations 1812 and 1806, an additional 15 access ramps become unusable and one low water ramp comes on line, leaving only 12 usable ramps on the reservoir. Only 11 of the 35 access areas have operable ramps as 12 additional access areas lose all access ramps within this elevation zone. The 15 access ramps closed within this elevation zone are:

<b>Ramp</b>	<b>Ramp Bottom Elevation</b>
Beaver Bay low water (COE) ramp	1808
Camp of the Cross low water ramp	1806
Deepwater Creek first low water ramp	1809
Deepwater Creek second low water ramp	1805.5
Indian Hills second low water ramp	1807
New Town Marina first low water ramp	1810
New Town Marina second low water ramp	1807
Parshall Bay first low water ramp	1808.5
Pouch Point third low water ramp	1809
Reunion Bay second low water ramp	1808
Sanish Bay (Aftem) low water ramp	1807.4
Skunk Creek Recreation Area main ramp	1806.5
Sportsmen's Centennial low water ramp	1808.5
Van Hook (west) low water ramp	1808
Van Hook Gull Island low water ramp	1805

The one low water ramp that becomes available within this elevation zone is:

- Sakakawea State Park low water ramp has a top elevation of 1807

The 12 new access areas that are no longer usable within this elevation zone are:

- Beaver Bay
- Camp of the Cross
- Deepwater Creek
- Indian Hills
- New Town Marina
- Parshall Bay
- Pouch Point
- Reunion Bay
- Sanish Bay
- Skunk Creek Recreation Area
- Sportsman's Centennial
- Van Hook

Municipal Water Intakes - Operational problems begin within this elevation zone for the Parshall municipal water intake. The top of the screen/intake is at elevation 1808.8 and because the intake needs at least three feet of water, operational problems begin at elevation 1811.8. This intake supports a population of approximately 1000.

Invasive species – As the reservoir elevation declines, the area of land susceptible to overgrowth by invasive species increases. The “land-clearing” action induced by the falling reservoir creates optimal conditions for the germination of weeds. Proactive measures, including close coordination with local weed boards, should continue in an effort to control weeds in the highest priority areas.

As the reservoir continues to fall, the issue with weeds becomes exacerbated as the areas exposed continue to grow. Not only is control of the new “exposure” necessary, eradication of the weeds that have previously become established is desired. This creates an enormous burden in terms of both manpower and monetary resources.

Cultural and historic resources - For this elevation zone, cultural and historic resources continue to be affected by low pool conditions. However, due to the sensitive nature of the cultural and historic resource sites, it is not possible to include specific elevations, data, or other information for the sites. Refer to the CRMP for more specific details.

Coldwater fish habitat – Negative impacts on the coldwater fish habitat continue to increase as the reservoir level drops below elevation 1812. The reservoir coldwater pool continues to shrink toward the dam horizontally and collapse vertically. Oxygen depletion increases and as does predation and crowding of target coldwater species.

Irrigation intakes – This is an issue for all Low Pool Elevation Zones. As the reservoir level falls irrigators have to chase the water with their intake structures.

Erosion problems - Wave action may induce damage to shorelines, structures, and other facilities. Geographic Information System mapping and other data processing activities are ongoing.

Hazards – Blowing dust begins to become more of an issue as larger expanses of open shoreline are exposed with the drop in water level. Areas particularly at risk are those close to population centers and popular recreation areas. Hazards such as stumps, logs, mudflats, sand bars, and shallow water are a risk within this elevation zone. This becomes very prevalent on the west end of the reservoir as more and more mud flats become exposed.

#### **3.3.3.4.2. Opportunities**

Maintenance – Low water levels provide opportunities for conducting maintenance on reservoir facilities as areas usually under water become exposed. Activities such as dredging and shoreline stabilization may be easier to complete than at normal pool elevations. There are also opportunities for photo documentation of problem areas and hazards.

Wildlife benefits – The decreasing water elevation may provide some benefit for wildlife including nesting opportunities for T&E Species—particularly in the first few years of the elevation drop.

Cultural resources – There may be opportunities to conduct cultural resource surveys in areas of newly exposed shoreline. The lower pool elevations may also provide an opportunity for the installation of protective measures for sensitive sites

Recreation – There may be opportunities for identifying locations for controlled ORV access and recreation. These areas will have to be carefully selected for ease of access, minimization of conflict with other users and resources, and ability of the Corps to easily control and monitor the area.

Grazing – As the water level drops over a period of years and vegetation becomes established on the new shoreline there may be more opportunity for grazing on the exposed shoreline adjacent to existing grazing parcels. Grazing should be monitored closely and rangeland evaluated to assure resources are not adversely impacted. Overgrazing can reduce the value of vegetation for wildlife habitat, and also for fish habitat after lake levels rise and the area is inundated once again.

#### **3.3.3.3.5. Low Pool Elevation Zone 5 - 1806 to 1800**

##### **3.3.3.3.5.1. Issues**

Reservoir access – As the reservoir level drops between elevations 1806 and 1800, an additional nine access ramps become marginal or unusable. No new low water ramps



come on line. This leaves a total of three usable ramps for the entire reservoir. Only three of the 35 access areas on the reservoir have operable ramps. The nine access ramps closed within this elevation zone are:

<b>Ramp</b>	<b>Ramp Bottom Elevation</b>
Beulah Bay ramp	1799
Douglas Creek low water ramp	1801
Four Bears Park south low water ramp	1803
Garrison Creek Cabin site ramp	1802
Government Bay (relocation) ramp	1803
Sakakawea State Park main ramp	1800
Sakakawea State Park low water ramp	1800
White Earth Bay main ramp	1801
Wolf Creek Recreation Area second low water ramp	1802.5

The three access areas that remain usable within this elevation zone are:

- Dakota Waters Resort
- Fort Stevenson
- McKenzie Bay

Municipal Water Intakes - Operational problems begin within this elevation zone for five of the municipal water intakes. The five intakes are White Shield, Twin Buttes, Four Bears, Pick City, and Garrison. In addition, Parshall has the ability to lower their intake but this causes water quality and turbidity problems (intake shutdown elevation not available).

For White Shield the top of the screen/intake is at elevation 1787 and operational problems begin at elevation 1805. This intake supports a population of approximately 720.

For Twin Buttes the top of the screen/intake is at elevation 1782 and operational problems begin at elevation 1805. This intake supports a population of approximately 425.

For Four Bears the top of the screen/intake is at elevation 1789 and operational problems begin at elevation 1800. This intake supports a population of approximately 900. Erosion due to low reservoir levels has caused sediment to collect in the intake piping.

For Pick City the top of the screen/intake is at elevation 1795 and operational problems begin at elevation 1800. This intake supports a population of approximately 200. This intake needs at least five feet of water over the intake.

For Garrison the top of the screen/intake is at elevation 1787 and operational problems begin at elevation 1805. This intake supports a population of approximately 2000.

Invasive species – As the reservoir elevation declines, the area of land susceptible to overgrowth by invasive species increases. The “land-clearing” action induced by the falling reservoir creates optimal conditions for the germination of weeds. Proactive measures, including close coordination with local weed boards, should continue in an effort to control weeds in the highest priority areas.

As the reservoir continues to fall, the issue with weeds becomes exacerbated as the areas exposed continue to grow. Not only is control of the new “exposure” necessary, eradication of the weeds that have previously become established is desired. This creates an enormous burden in terms of both manpower and monetary resources.

Cultural and historic resources - For this elevation zone, cultural and historic resources continue to be affected by low pool conditions. However, due to the sensitive nature of the cultural and historic resource sites, it is not possible to include specific elevations, data, or other information for the sites. Refer to the CRMP for more specific details.

Coldwater fish habitat - Coldwater fish habitat continues to be impacted as all of the identified issues associated with the collapsed habitat continue to worsen.

Irrigation intakes – This is an issue for all Low Pool Elevation Zones. As the reservoir level falls irrigators have to chase the water with their intake structures.

Erosion problems - Wave action may induce damage to shorelines, structures, and other facilities. Geographic Information System mapping and other data processing activities are ongoing.

Hazards – Blowing dust begins to become more of an issue as larger expanses of open shoreline are exposed with the drop in water level. Areas particularly at risk are those close to population centers and popular recreation areas. Hazards such as stumps, logs, mudflats, sand bars, and shallow water are a risk within this elevation zone.

#### **3.3.3.3.5.2. Opportunities**

Maintenance – Low water levels provide opportunities for conducting maintenance on reservoir facilities as areas usually under water become exposed. Activities such as dredging and shoreline stabilization may be easier to complete than at normal pool elevations. There are also opportunities for photo documentation of problem areas and hazards.

Wildlife benefits – The decreasing water elevation may provide some benefit for wildlife including nesting opportunities for T&E Species—particularly in the first few years of the elevation drop.

Cultural resources – There may be opportunities to conduct cultural resource surveys in areas of newly exposed shoreline. The lower pool elevations may also provide an opportunity for the installation of protective measures for sensitive sites

Recreation – There may be opportunities for identifying locations for controlled ORV access and recreation. These areas will have to be carefully selected for ease of access, minimization of conflict with other users and resources, and ability of the Corps to easily control and monitor the area.

Grazing – As the water level drops over a period of years and vegetation becomes established on the new shoreline there may be more opportunity for grazing on the exposed shoreline adjacent to existing grazing parcels. Grazing should be monitored closely and rangeland evaluated to assure resources are not adversely impacted. Overgrazing can reduce the value of vegetation for wildlife habitat, and also for fish habitat after lake levels rise and the area is inundated once again.

### **3.3.3.3.6. Low Pool Elevation Zone 6 - 1800 to 1775**

#### **3.3.3.3.6.1. Issues**

Reservoir access – As the reservoir level drops below elevation 1800, the final three access ramps become unusable with the Fort Stevenson access ramp usable down to elevation 1793. The final three access ramps closed within this elevation zone are:

- Dakota Waters Resort low water ramp extends to elevation 1797
- Fort Stevenson low water ramp extends to elevation 1790
- McKenzie Bay east ramp extends to elevation 1796

Municipal Water Intakes - Operational problems begin within this elevation zone for two municipal water intakes. The two intakes are Mandaree and the Southwest pipeline project.

For Mandaree the top of the screen/intake is at elevation 1786 and operational problems begin at elevation 1789. Shutdown of the intake would occur at reservoir elevation 1784 in the summer and elevation 1794 in winter. This intake supports a population of approximately 780.

For the southwest pipeline project the top of the screen/intake is at elevation 1779 and operational problems begin at elevation 1782. Shutdown of this intake would occur at reservoir elevation 1776. This intake supports a population of approximately 34,000.

The previously mentioned municipal intakes will all shut down at some point within this zone unless emergency/preventive measures are undertaken. The reservoir elevation at which these intakes shut down are as follows:

- White Shield shuts down at elevation 1787 in summer and 1792 in winter
- Twin Buttes shuts down at elevation 1788 in summer and 1790 in winter
- Four Bears shuts down at elevation 1792 in summer and 1794 in winter
- Pick City shuts down at elevation 1796
- Garrison shuts down at elevation 1792

Invasive species – As the reservoir elevation declines, the area of land susceptible to overgrowth by invasive species increases. The “land-clearing” action induced by the falling reservoir creates optimal conditions for the germination of weeds. Proactive measures, including close coordination with local weed boards, should continue in an effort to control weeds in the highest priority areas.

As the reservoir continues to fall, the issue with weeds becomes exacerbated as the areas exposed continue to grow. Not only is control of the new “exposure” necessary, eradication of the weeds that have previously become established is desired. This creates an enormous burden in terms of both manpower and monetary resources.

Cultural and historic resources - For this elevation zone, cultural and historic resources continue to be affected by low pool conditions. However, due to the sensitive nature of the cultural and historic resource sites, it is not possible to include specific elevations, data, or other information for the sites. Refer to the CRMP for more specific details.

Coldwater fish habitat - Coldwater fish habitat is likely highly impacted as the total depth of the reservoir pool at the dam drops below 130 feet deep.

Irrigation intakes – This is an issue for all Low Pool Elevation Zones. As the reservoir level falls irrigators have to chase the water with their intake structures.

Erosion problems - Wave action may induce damage to shorelines, structures, and other facilities. Geographic Information System mapping and other data processing activities are ongoing.

Hazards – Blowing dust begins to become more of an issue as larger expanses of open shoreline are exposed with the drop in water level. Areas particularly at risk are those close to population centers and popular recreation areas. Hazards such as stumps, logs, mudflats, sand bars, and shallow water are a risk within this elevation zone.

#### **3.3.3.3.6.2. Opportunities**

Maintenance – Low water levels provide opportunities for conducting maintenance on reservoir facilities as areas usually under water become exposed. Activities such as dredging and shoreline stabilization may be easier to complete than at normal pool elevations. There are also opportunities for photo documentation of problem areas and hazards.

Wildlife benefits – The decreasing water elevation may provide some benefit for wildlife including nesting opportunities for T&E Species—particularly in the first few years of the elevation drop.

Cultural resources – There may be opportunities to conduct cultural resource surveys in areas of newly exposed shoreline. The lower pool elevations may also provide an opportunity for the installation of protective measures for sensitive sites

Recreation – There may be opportunities for identifying locations for controlled ORV access and recreation. These areas will have to be carefully selected for ease of access, minimization of conflict with other users and resources, and ability of the Corps to easily control and monitor the area.

Grazing – As the water level drops over a period of years and vegetation becomes established on the new shoreline there may be more opportunity for grazing on the exposed shoreline adjacent to existing grazing parcels. Grazing should be monitored closely and rangeland evaluated to assure resources are not adversely impacted. Overgrazing can reduce the value of vegetation for wildlife habitat, and also for fish habitat after lake levels rise and the area is inundated once again.

### **3.3.4. MANAGEMENT STRATEGIES**

This section outlines a list of strategies designed to deal with each of the high and low pool issues identified in the management plan.

#### **3.3.4.1. Reservoir Access**

##### **3.3.4.1.1. Ramps**

Extend existing ramps. Identify areas where slope and low water extent would allow extension of existing boat ramps.

Install new permanent low water ramps. Identify access areas where topographic slope and low water conditions would allow for the installation of new permanent low water ramps.

##### **3.3.4.1.2. Marinas**

Identify areas where existing access roads could be extended and temporary marinas accommodated.

Investigate the possibility for use of mobile docks that could be lowered or raised depending on water levels or for use of portable or seasonal docks that could be relocated.

#### **3.3.4.2. Off Road Vehicle Control**

Designate specific areas for ORV use that are safe and can be controlled. Investigate potential areas where ORV activities can take place with minimal impact. Identified areas would be designated with signage and public notices. Identify and fence important habitat, cultural features, and areas susceptible to erosion in the vicinity of the designated ORV access area. Make recreation/ORV areas day use only and use fences to restrict access after sunset and before sunrise.

Initiate public education campaign. Implement a multifaceted public education campaign using signage, flyers, background material, kiosks, and other sources to educate ORV

users. Educate ORV operators on the potential negative impacts and effects caused by ORV use.

Use spot-checking or regular patrols to enforce off limit areas.

#### **3.3.4.3. Invasive Species**

Monitor and identify problem/concern areas and begin an aggressive spray program. Establish an annual spray schedule focusing on areas most likely to be exposed by projected reservoir levels.

In combination with the spray program, replant areas with aggressive native grasses, sterile rye grasses, or other non-invasive cover crop.

Control and eradication can only be accomplished through communication and coordination with private land owners, state Agricultural Committees, the County Invasive Weed Board, and the Noxious Weed Task Force (founded in 2005).

Investigate the practicality of enlisting students from local schools and colleges or friends groups to take part in species monitoring.

Investigate the practicality of seasonal prescribed burns. Identify areas where prescribed burning could be utilized safely and implement seasonal burn regime.

#### **3.3.4.4. Cultural Resources**

Identify areas of highest priority for cultural significance where erosion is likely to take place and install protective measures (i.e. rip-rap, vegetation) to prevent and deter vandalism.

Enact temporary closure of sensitive cultural areas. Close areas with exposed cultural sites.

Begin a public education and outreach program to teach people the significance of cultural resources and laws regarding the removal of objects from federal land.

Investigate the possibility of beginning a cooperative program of monitoring and maintenance with local tribes. Coordinate with tribes to identify and monitor cultural resource sites. Develop and implement a maintenance and monitoring program based on elevation zones and highest priority resource areas.

#### **3.3.4.5. Municipal Intakes**

Monitor reservoir elevations to detect any issues concerning the operation of municipal intakes on the project. If issues arise, be prepared to offer technical assistance concerning extending and/or armoring intakes to allow withdrawal without interruption. Encourage non-Federal entities to pursue Corps cost-sharing programs identified in Section 2.19.12 of the Master Plan/EA as needed and appropriate, to reduce the risk that municipal water intakes may become non-functional.

#### **3.3.4.6. Threatened and Endangered Species**

Pool management needs to be carefully coordinated with land management to avoid rises during the nesting season, if possible. Other management necessities may have greater importance for pool level management, but the potential for impacting the nests should be considered.

Identify and monitor critical areas seasonally. Inventory and identify endangered species habitat and monitor on a seasonal basis.

Educate public about endangered species and habitat needs. Implement a multifaceted public education campaign using signage, flyers, background material, kiosks, and other sources to educate the public about endangered species.

#### **3.3.4.7. Fish Hatchery Rearing Ponds**

Provide technical assistance to the USFWS in their investigation to find a more reliable source of water for maintaining its rearing ponds.

#### **3.3.4.8. Bank Erosion**

Prioritize bank erosion areas into (1) essential facilities and safety areas, (2) cultural sites, (3) secondary areas, and (4) tertiary areas.

(1) Identify critical and priority bank erosion areas such as roads, ramps, and docks or areas of particular safety concern such as unstable banks near recreation areas and create a primary stabilization program. Use riprap only in unstable and dangerous areas.

Develop a budget and prioritized list of projects to be completed over the next six years. Include an emergency budget for unforeseen problems.

(2) Prioritize cultural sites in danger of erosion through processes identified under cultural resources section.

(3) Plant vegetation to assist in bank stabilization in areas of secondary importance. Identify areas with potential for fast growing plants and bioengineering (willow stakes or fascines).

(4) Allow erosion to take place in areas where impacts would be minimal.

#### **3.3.4.9. Irrigation Intakes**

Provide public outreach effort to educate interested stakeholders about access to daily reservoir elevations (<http://www.nwd-mr.usace.army.mil/rcc/current.html>) and provide contingency plans for emergency situations. This will allow irrigators who rely on the reservoir for water to adjust their operations as necessary.

#### **3.3.4.10. Coldwater Fish Habitat**

Maintain underwater barrier structures on intake trash racks. Monitor the fishery for negative effects at extreme low water.

#### **3.3.4.11. Safety and Health Hazards**

Elimination of tag fence lines is a necessity as the pool level rises in order to avoid recreational hazards. Tag fences that are left in place during pool rise events can quickly be inundated and pose an underwater hazard for boaters, swimmers, and anglers.

Electrical equipment associated with temporary uses or pumps that follow the reservoir level down need to be removed or secured as reservoir levels increase. Provide public outreach effort to educate interested stakeholders about access to daily reservoir elevations (<http://www.nwd-mr.usace.army.mil/rcc/current.html>). This will inform landowners and recreation users of potential water level changes.

#### **3.3.4. 12. Facility Maintenance**

Form facilities maintenance plan based on the specific facilities and identified pool elevation zones.

### **3.3.5. RECOMMENDATIONS**

This section provides recommendations on specific management strategies to use within each of the elevation zones for addressing the identified issues. The section also describes criteria for selection of individual strategies—such as time of year, projected future pool elevations, and weather conditions.

#### **3.3.5.1. General**

##### **3.3.5.1.2. Communications**

Many of the issues identified under high and low water conditions require a basic communication strategy because of the need to communicate status/risk to the public or specific target groups. The communication strategy is also necessary to inform Corps staff and other agency personnel so they can be prepared to implement the necessary management strategies. Many of the management strategies discussed later in this section require a series of actions in specific sequence and complex notifications and coordination among multiple agencies and the public. It will be important to have a clear communication strategy in place for these to work. A clear strategy with lines of communication identified with specific triggers needs to be in place before any of the proposed management strategies will be effective.

It is also important for risks, based on historical and reasonably foreseeable future pool levels, to be communicated to prospective developers and/or concessionaires so that they can design and locate facilities in a manner that reduces risk of adverse physical and economic effects from high and low pool levels. Current and prospective developers and/or concessionaires should contact the Garrison Project Office in Riverdale regarding their data and mapping needs and communicate with that office regarding their proposed facilities as early as possible in their implementation process. The Corps will make every effort to coordinate and share data with all affected existing and/or potential partners.

The communication strategy needs to be directed at getting projected pool level information and likely consequences to the most likely impacted users. Ramp and access area closures, restricted areas, and safety and health hazard warnings all need to be



communicated clearly and quickly to relevant interest groups. For example, if the reservoir level is projected to approach a high pool elevation of 1852 the communication strategy would target likely users of the Douglas Creek, Hazen Bay (east), and the Little Missouri River camp grounds, which are recreation areas subject to inundation at that level. A multifaceted public education campaign using signage, flyers, web based data and alerts, and other sources could be used to warn potential visitors. Also, information on why the reservoir level varies and the impact it has on the ecology, recreation, and cultural resources may be provided at the most popular recreation sites.

Local interest groups and government agencies that support recreational facilities are critical stakeholders in the development of the communication strategy. Active coordination with them has proven successful in the past to meet public needs efficiently. Friends of Lake Sakakawea is a multi-agency interest group that collaborates with the Corps on recreation planning and could be enlisted to help develop and execute the communication strategy.

Facility closures and openings require a variety of communications; potential visitors must be notified that areas are closed or newly opened. A communication plan should be coordinated with local businesses and media sources. In some locations facilities are 30 miles from hard surfaced roads. Early notification of closure is necessary to avoid visitor frustration and expense. Signs should be placed on site and at all available access points to an area. One option is to provide signs or informational posters at each recreation site detailing what facilities are available at specific pool elevations.

Communication strategies should be developed for the following issue areas: reservoir access and recreation, invasive species, cultural resources, bank erosion, and safety and health issues. Elevation zone specific recommendations are provided below by topic. The implementation of these recommendations should be coordinated project wide and by zone. Individual plans for each category are not appropriate.

#### **3.3.5.1.3. Reservoir Access Ramps**

Prepare a monitoring plan for determining when ramps or recreation areas are either no longer functional because of a change in water level or have recently become functional because of a drop in water level. Ramps that are inundated during high water, or low water ramps that emerge as the reservoir drops, will need to be cleaned, rehabilitated, and prepared for use as they become uncovered. A monitoring plan should be in place based on projected reservoir elevations so that these closures and openings can be anticipated and executed with minimal disruption to recreational users.

The Corps of Engineers should work with the other agencies responsible for ramp management and maintenance to identify funding sources for extending ramps.

As ramp extension projects or other recreation area mitigation projects are identified and funding appropriated, establish a schedule for project implementation based on projected reservoir pool elevations. During times of low pool elevations concentrate on lower ramp

extensions and low water ramp facilities. As pool elevations are projected to rise into normal operating ranges, concentrate on high pool mitigation projects.

**Table 3.3.5.1.3. - Ramps Identified for Possible Extension**

<b>Ramp</b>	<b>Potential Ramp Extension Elevations</b>	<b>Comments</b>
Beulah Bay ramp	down to 1794	Category 3
Camp of the Cross low water ramp	up to 1825 and down to 1804	Category 4
Deepwater Creek first low water ramp	down to 1804	Category 1
Deepwater Creek second low water ramp	down to 1796	Category 1
Douglas Creek low water ramp	down to 1794	Category 1
Fort Stevenson low water ramp	up to 1840	Category 2
Four Bears Park east main ramp	down to 1830	Category 4
Four Bears Park east main ramp and south low water ramp	down to 1794	Category 4
Government Bay (relocation) ramp	down to 1796	Category 1
Hazen Bay Walleye ramp	up to 1840 and down to 1794	Category 4
Indian Hills second low water ramp	up to 1825 and down to 1806	Category 4
McKenzie Bay east ramp	down to 1794	Category 4
New Town Marina low water ramp	down to 1808	Category 4
Pouch Point third low water ramp	down to 1802	Category 4
Reunion Bay second low water ramp	down to 1802	Category 1
Sakakawea State Park low water ramp	down to 1794	Category 4
Sanish Bay (Aftem) low water ramp	up to 1830 and down to 1802	Category 4
Skunk Creek Recreation Area main ramp	down to 1800	Category 4
Van Hook Gull Island low water ramp	down to 1798	Category 4
Wolf Creek Recreation Area second low water ramp	down to 1800	Category 1

#### **3.3.5.1.4. Cultural and Historic Resources**

The Corps has already implemented several methods to prevent destruction of cultural resources during high and low water conditions. These include bank stabilization, surveys and excavation, monitoring, public education and patrols, selective relocation, and vegetative ground cover. The Corps has worked with the tribes to develop the Cultural Resources Management Plan (CRMP). Continue to work with tribes to implement a maintenance and monitoring program based on elevation zones and highest priority resource areas. In cooperation with the tribes, develop a list of sites to be stabilized during times of low water, continue to communicate and work with the tribes on preventing impacts.

#### **3.3.5.1.5. Bank Erosion**

Identify and prioritize bank erosion areas that affect essential facilities and public safety. Prioritize or rank the critical bank erosion sites that impact areas such as roads, ramps, and docks or areas of particular safety concern such as unstable banks near recreation areas. Create and fund a stabilization program to address these sites. Use riprap only when bioengineering methods are inappropriate.

Consider developing a budget and list of projects and prepare a schedule for projects to be completed. This will be dependent on water levels. Water could rise and stay high enough that projects cannot be completed. Include an emergency budget for unforeseen problems.

### **3.3.5.2. High Water Operating Conditions - Elevation 1850 to 1855**

#### **3.3.5.2.1. High Pool Elevation Zone 1 - 1850 to 1852**

##### **3.3.5.2.1.1. Reservoir Access and Recreation**

As forecasted reservoir levels approach the High Pool Elevation Zone 1, the communications strategy should be implemented for ramps and recreation facilities that are in danger of inundation. Within this elevation zone eleven ramps will need to be closed. Three other ramps are open but subject to damage. Additionally, multiple cabins, swimming areas, campsites, playgrounds, and access roads will be inundated.

Evaluate access roads that are vulnerable to damage at high water for feasibility to raise the access roads or armor them. In cooperation with stakeholders, evaluate and prioritize access road protection projects with high water ramp extension opportunities.

##### **3.3.5.2.1.2. Bank Erosion**

It is recommended that intense monitoring of at risk structures, such as concrete ramps and access roads, be implemented. Particular attention should be paid to areas of significant erosion, which could pose a threat to public safety, or threaten the structure itself.

### **3.3.5.2.1.3. Property Boundaries**

Private properties that are subject to inundation under high pool conditions should be identified and considered for purchase by the Corps. Plan for financing and purchase of the most affected properties first and schedule out a timeline for eventual purchase of all affected properties.

### **3.3.5.2.1.4. Facility Maintenance**

To the extent possible, maintenance and monitoring of closed areas should continue. Refuse collection, mowing, cleaning, and grounds maintenance is necessary to protect areas from deterioration. Neglect will reflect poorly on the Corps and increase start up expenses when areas are re-opened. Neglect may also lead to unauthorized use, which will increase law enforcement expenses.

### **3.3.5.2.2. High Pool Elevation Zone 2 - 1852 to 1855**

#### **3.3.5.2.2.1. Reservoir Access and Recreation**

As forecasted reservoir levels approach the High Pool Elevation Zone 2 the communications strategy should be widened to include the additional ramps and recreation facilities in danger of inundation. As reservoir levels rise into this elevation zone eight additional main ramps will need to be closed. Additionally, multiple campsites, cabins, and access roads will be inundated.

In cooperation with stakeholders, evaluate access roads that are vulnerable to damage at high water for feasibility to raise the access roads or armor them. Evaluate and prioritize access road protection projects with high water ramp extension opportunities.

#### **3.3.5.2.2.2. Bank Erosion**

It is recommended that intense monitoring of the at-risk structures, such as concrete ramps and access roads, be implemented. Particular attention should be paid to areas of significant erosion, which could pose a threat to public safety, or threaten the structure itself.

#### **3.3.5.2.2.3. Property Boundaries**

Private properties that are subject to inundation under high pool conditions should be identified and targeted for purchase by the Corps. Plan for financing and purchase of the most affected properties first and schedule out a timeline for eventual purchase of all affected properties.

#### **3.3.5.2.2.4. Facility Maintenance**

To the extent possible, maintenance and monitoring of closed areas should continue. Refuse collection, mowing, cleaning, and grounds maintenance is necessary to protect areas from deterioration. Neglect will reflect poorly on the Corps and increase start up expenses when areas are re-opened. Neglect may also lead to unauthorized use, which will increase law enforcement expenses.

### **3.3.5.3. Low Water Operating Conditions - Elevation 1838 and Below**

#### **3.3.5.3.1. Low Pool Elevation Zone 1 - 1838 to 1830**

##### **3.3.5.3.1.1. Reservoir Access and Recreation**

Begin observations of access areas and institute monitoring protocols. Implement the communication strategy for closures and direct recreation users to newly opened facilities. A total of 16 ramps will become unusable within this elevation zone and 13 low water ramps will come on line.

Investigate potential locations for controlled ORV access and recreation. Areas should possess ease of access, minimal potential for conflict with other users and resources, and the ability for the Corps to easily control and monitor the area.

##### **3.3.5.3.1.2. Invasive Species**

Begin monitoring of potential areas of concern and commence spray program. Establish an annual spray and monitoring schedule focusing on areas most likely to be exposed within this elevation zone based on projected reservoir levels for the coming growing season.

##### **3.3.5.3.1.3. Cultural Resources**

Implement the cultural resources management plan. Coordinate with tribes to assist in the implementation of a maintenance and monitoring program based on elevation zones and highest priority resource areas. The monitoring program should include a survey of known sites within this elevation to track changes over time and to determine if they have been disturbed.

##### **3.3.5.3.1.4. Threatened and Endangered Species**

Begin significant increase in T&E Species monitoring in areas identified as likely to provide necessary habitat within this elevation zone. Inventory and identify endangered species habitat and monitor on a seasonal basis.

##### **3.3.5.3.1.5. Safety and Health Hazards**

Implement communications strategy for identified high priority safety hazard areas.

##### **3.3.5.3.1.6. Facility Maintenance**

For this elevation zone there is minimal increased project maintenance (i.e. clearing mud/debris from boat ramps, excavating sediment from dry dock areas).

#### **3.3.5.3.2. Low Pool Elevation Zone 2 - 1830 to 1825**

##### **3.3.5.3.2.1. Reservoir Access and Recreation**

Continue observations of access areas and perform monitoring protocols. Implement the communication strategy for closures and direct recreation users to newly opened facilities. A total of 20 ramps will become unusable within this elevation zone and 10 low water ramps will come on line.

Investigate potential locations for controlled ORV access and recreation. Areas should possess an ease of access, minimal potential for conflict with other users and resources, and the ability for the Corps to easily control and monitor the area.

#### **3.3.5.3.2.2. Invasive Species**

Continue monitoring of potential areas of concern and commence spray program. Establish an annual spray schedule focusing on areas most likely to be exposed within this elevation zone based on projected reservoir levels for the coming growing season.

#### **3.3.5.3.2.3. Cultural Resources**

Implement the cultural resources management plan for identified areas of concern. Coordinate with tribes to assist in the implementation of a maintenance and monitoring program based on elevation zones and highest priority resource areas.

#### **3.3.5.3.2.4. Threatened and Endangered Species**

Continue T&E Species monitoring in areas identified as likely to provide necessary habitat within this elevation zone. Inventory and identify endangered species habitat and monitor on a seasonal basis.

#### **3.3.5.3.2.5. Safety and Health Hazards**

Implement communications strategy for identified high priority safety hazard areas.

#### **3.3.5.3.2.6. Facility Maintenance**

Look for opportunities to conduct facility maintenance (i.e. clearing mud/debris from boat ramps, excavating sediment from dry dock areas).

### **3.3.5.3.3. Low Pool Elevation Zone 3 - 1825 to 1812**

#### **3.3.5.3.3.1. Reservoir Access and Recreation**

Continue observations of access areas and perform monitoring protocols. Implement the communication strategy for closures and direct recreation users to newly opened facilities. A total of 26 ramps will become unusable within this elevation zone and 12 low water ramps will come on line.

Investigate potential locations for controlled ORV access and recreation. Areas should possess an ease of access, minimal potential for conflict with other users and resources, and the ability for the Corps to easily control and monitor the area.

#### **3.3.5.3.3.2. Fish Hatchery Rearing Ponds**

As the reservoir drops below elevation 1825, the ability to fill the spillway pond from the main reservoir is eliminated. This in turn eliminates the ability of the USFWS to maintain the water level in its rearing ponds from the spillway pond. Be prepared to provide technical assistance to the USFWS regarding the filling of the rearing ponds.

For the long-term, provide the USFWS with technical assistance in its effort to develop a permanent water supply source for their rearing ponds that is not directly tied to the reservoir elevation.

#### **3.3.5.3.3.3. Coldwater Fish Habitat**

Maintenance of coldwater fish habitat becomes an issue at elevation 1825. Maintain the underwater barrier structures on the intakes and monitor the fishery for negative effects.

#### **3.3.5.3.3.4. Invasive Species**

Continue monitoring of potential areas of concern and commence spray program for newly exposed areas. Establish a spray schedule focusing on areas most likely to be exposed and subject to invasive species within this elevation zone based on projected reservoir levels for the coming growing season.

#### **3.3.5.3.3.5. Cultural Resources**

Implement the cultural resources management plan for identified areas of concern. Coordinate with tribes to assist in the implementation of a maintenance and monitoring program based on elevation zones and highest priority resource areas.

#### **3.3.5.3.3.6. Threatened and Endangered Species**

Continue T&E Species monitoring in areas identified as likely to provide necessary habitat within this elevation zone. Inventory and identify endangered species habitat and monitor on a seasonal basis.

#### **3.3.5.3.3.7. Safety and Health Hazards**

Implement communications strategy for identified high priority safety hazard areas.

#### **3.3.5.3.3.8. Facility Maintenance**

Continue to look for opportunities to conduct facility maintenance (i.e. clearing mud/debris from boat ramps, excavating sediment from dry dock areas).

### **3.3.5.3.4. Low Pool Elevation Zone 4 - 1812 to 1806**

#### **3.3.5.3.4.1. Reservoir Access and Recreation**

Continue observations of access areas and perform monitoring protocols. Implement the communication strategy for closures and direct recreation users to newly opened facilities. A total of 15 ramps will become unusable within this elevation zone and one low water ramp comes on line.

Investigate potential locations for controlled ORV access and recreation. Areas should possess an ease of access, minimal potential for conflict with other users and resources, and the ability for the Corps to easily control and monitor the area.

#### **3.3.5.3.4.2. Municipal Intakes**

Operational problems begin for the municipal water intake for Parshall within this elevation zone. Monitor the intake elevation and prepare to provide technical assistance to the City of Parshall.

#### **3.3.5.3.4.3. Coldwater Fish Habitat**

Continue to monitor the fishery for negative effects and maintain the barrier structures on the intakes.

#### **3.3.5.3.4.4. Invasive Species**

Continue monitoring of potential areas of concern and commence spray program. Establish an annual spray schedule focusing on areas most likely to be exposed within this elevation zone based on projected reservoir levels for the coming growing season.

#### **3.3.5.3.4.5. Cultural Resources**

Implement the cultural resources management plan for identified areas of concern. Coordinate with tribes to assist in the implementation of a maintenance and monitoring program based on elevation zones and highest priority resource areas.

#### **3.3.5.3.4.6. Threatened and Endangered Species**

Continue T&E Species monitoring in areas identified as likely to provide necessary habitat within this elevation zone. Inventory and identify endangered species habitat and monitor on a seasonal basis.

#### **3.3.5.3.4.7. Safety and Health Hazards**

Implement communications strategy for identified high priority safety hazard areas.

#### **3.3.5.3.4.8. Facility Maintenance**

Continue to look for opportunities to conduct facility maintenance (i.e. clearing mud/debris from boat ramps, excavating sediment from dry dock areas).

### **3.3.5.3.5. Low Pool Elevation Zone 5 - 1806 to 1800**

#### **3.3.5.3.5.1. Reservoir Access and Recreation**

Continue observations of access areas and perform monitoring protocols. Implement the communication strategy for closures. A total of nine ramps will become unusable within this elevation zone.

Investigate potential locations for controlled ORV access and recreation. Areas should possess an ease of access, minimal potential for conflict with other users and resources, and the ability for the Corps to easily control and monitor the area.

#### **3.3.5.3.5.2. Municipal Intakes**

Operational problems begin at municipal water intakes for White Shield, Twin Buttes, Four Bears, Pick City, and Garrison. Monitor the intake elevations and prepare to provide technical assistance if requested.



#### **3.3.5.3.5.3. Coldwater Fish Habitat**

Continue to monitor the fishery for negative effects and maintain the barrier structures on the intakes.

#### **3.3.5.3.5.4. Invasive Species**

Continue monitoring potential areas of concern and commence spray program. Establish an annual spray schedule focusing on areas most likely to be exposed within this elevation zone based on projected reservoir levels for the coming growing season.

#### **3.3.5.3.5.5. Cultural Resources**

Implement the cultural resources management plan for identified areas of concern. Coordinate with tribes to assist in the implementation of a maintenance and monitoring program based on elevation zones and highest priority resource areas.

#### **3.3.5.3.5.6. Threatened and Endangered Species**

Continue T&E Species monitoring in areas identified as likely to provide necessary habitat within this elevation zone. Inventory and identify endangered species habitat and monitor on a seasonal basis.

#### **3.3.5.3.5.7. Safety and Health Hazards**

Implement communications strategy for identified high priority safety hazard areas.

#### **3.3.5.3.5.8. Facility Maintenance**

Continue to look for opportunities to conduct facility maintenance (i.e. clearing mud/debris from boat ramps, excavating sediment from dry dock areas).

### **3.3.5.3.6. Low Pool Elevation Zone 6 - below 1800**

#### **3.3.5.3.6.1. Reservoir Access and Recreation**

Continue observations of access areas and perform monitoring protocols. Implement the communication strategy for closures. The final three ramps will become unusable within this elevation zone.

Investigate potential locations for controlled ORV access and recreation. Areas should possess an ease of access, minimal potential for conflict with other users and resources, and the ability for the Corps to easily control and monitor the area.

#### **3.3.5.3.6.2. Municipal Intakes**

Operational problems begin at municipal water intakes for Mandaree and the Southwest Pipeline project. Monitor the intake elevations and prepare to provide technical assistance, if requested.

#### **3.3.5.3.6.3. Coldwater Fish Habitat**

Continue to monitor the fishery for negative effects and maintain the barrier structures on the intakes.

**3.3.5.3.6.4. Invasive Species**

Continue monitoring of potential areas of concern and commence spray program. Establish an annual spray schedule focusing on areas most likely to be exposed within this elevation zone based on projected reservoir levels for the coming growing season.

**3.3.5.3.6.5. Cultural Resources**

Implement the cultural resources management plan for identified areas of concern. Coordinate with tribes to assist in the implementation of a maintenance and monitoring program based on elevation zones and highest priority resource areas.

**3.3.5.3.6.6. Threatened and Endangered Species**

Continue T&E Species monitoring in areas identified as likely to provide necessary habitat within this elevation zone. Inventory and identify endangered species habitat and monitor on a seasonal basis.

**3.3.5.3.6.7. Safety and Health Hazards**

Implement communications strategy for identified high priority safety hazard areas.

**3.3.5.3.6.8. Facility Maintenance**

Facilities must continue to be maintained. In addition, monitor facilities for the opportunity to perform additional maintenance or inspection that cannot occur at higher lake levels (i.e. clearing mud/debris from boat ramps, excavating sediment from dry dock areas).

## **4. PUBLIC, TRIBAL, AND AGENCY INVOLVEMENT AND COORDINATION**

In January 2005, the Corps announced its plan to revise and update the Lake Sakakawea Master Plan, which had been approved and published in 1978. Since 1978, ten supplements had been added, and other widespread changes had taken place, resulting in a need to update the current document.

### **4.1. STEERING COMMITTEE**

In early 2005, federal, tribal, state and local agencies, organizations, and individuals having an interest in recreation development and natural resources management at Lake Sakakawea were contacted and the Steering Committee for the updated Lake Sakakawea Master Plan/Environmental Assessment (EA) was formed.

The purpose and role of the Steering Committee was to enhance, but not replace, public input by providing a cross-section of local expertise to represent local and regional concerns during the master planning process. Committee members would take information from the meetings back to the organizations they represented and bring back responses and comments based on their organization's perspective.

The following agencies/organizations were represented on the Steering Committee:

- U.S. Army Corps of Engineers, Omaha District & Garrison Dam Project Office
- U.S. Fish & Wildlife Service
- Bureau of Indian Affairs
- Three Affiliated Tribes
- Turtle Mountain Band of Chippewa
- Trenton Indian Service Area
- North Dakota Department of Agriculture
- North Dakota Game & Fish Department
- North Dakota Parks & Recreation Department
- North Dakota State Historical Preservation Office
- North Dakota State Water Commission
- Missouri River Joint Water Board
- North Dakota Chapter of The Wildlife Society
- North Dakota Sportfishing Congress
- The Friends of Lake Sakakawea
- Office of Senator Byron Dorgan

### **4.2. PUBLIC AND AGENCY SCOPING MEETINGS AND COMMENTS**

The Steering Committee was involved in the development of methods to provide opportunities and promote public participation, including the following:

- Posters and comment cards, announcing public information workshops and soliciting public input with regard to future land use around Lake Sakakawea (including Lake Audubon), were developed and distributed throughout the affected communities. News releases about the public workshops were sent to the Associated Press, 17 regional news publications (of which 15 also received

- paid advertisements), 5 television stations, and 24 radio stations. (See Appendix E.)
- Questions and comments could be submitted via postal service, telephone (Lake Manager and Omaha District toll-free number), project Web site, or in person at the public workshops. A project web site was developed, and maintained by the U.S. Army Corps of Engineers, Omaha District, at:  
[https://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/MP/mpupdate.html](https://www.nwo.usace.army.mil/html/Lake_Proj/garrison/MP/mpupdate.html).
  - Open-house workshops were held August 8-11, 2005, at the Beulah Civic Center, the Garrison City Auditorium, the New Town Civic Center, and at the El Rancho Motel in Williston, North Dakota (ND). Steering Committee members helped at the following “stations”:
    - Greeting Table: Personnel at this station welcomed attendees and provided quick overview of the master planning process. They answered any general questions and directed attendees to specific areas of interest.
    - Shoreland Station: Personnel at this station addressed concerns about recreation, lake access, boat docks, noxious weeds, cultural resource protection, and drought-related issues.
    - Fish and Wildlife Station: Personnel at this station addressed concerns about wildlife management, threatened and endangered species, and drought-related issues.
    - Upland Station: Personnel at this station addressed concerns about vegetative management, mineral leases, agricultural/grazing leases, environmental stewardship, and drought-related issues.
    - Audubon Station (Garrison only): Personnel at this station addressed issues specific to Lake Audubon.
    - Comment Table: Comment cards were provided, and attendees were encouraged to provide their master plan related comments at the workshop.

Approximately 123 attendees (93 different people) came to the four workshops. In addition, an agency scoping meeting was held July 7, 2005, at the Best Western Ramkota Hotel in Bismarck, ND. More than 150 comments were received at, and after, these five meetings. Comments were received on a wide range of topics. Topics and the number of comments received on each are listed below:

- Access – 12
- Better Communication – 5
- Cultural Resources – 4
- Dumping, Enforcement Problems – 26, including 15 that were nearly identical
- Economic Development – 7
- Recreation Facilities – 29
- Infrastructure – 8
- Marinas – 12
- Regulations and/or Management – 17
- Fish, Wildlife, Weeds, and Other Environmental Concerns – 25

- Other – 8. Some comments were received concerning the Missouri River Master Manual and land transfer issues. Since the Lake Sakakawea Master Plan/EA only addresses the future development and management of natural and cultural resources and recreation-related facilities in and around the reservoir, these comments were forwarded to the appropriate offices for response.

All scoping comments received through September 2005, along with responses coordinated by the Corps with other Steering Committee members and their organizations, were placed on the project Web site. The public scoping comments and agency scoping letters received were provided in Appendix E of the Draft Master Plan/EA.

#### **4.3. TRIBAL COORDINATION**

Five members of the Steering Committee, including the Bureau of Indian Affairs representative, are members of an American Indian tribe.

As part of a phased approach in providing for Tribal input, letters of invitation to an informational meeting on the Master Plan/EA were sent to 24 Tribes who were previously coordinated with in regard to the Programmatic Agreement. The meeting was held from 1:00 to 5:00 pm on Monday, April 18, 2005 in the Jack Barden Center at the United Tribes Technical College in Bismarck, ND.

Information about the Lake Sakakawea Master Plan/EA was provided to Tribal members and other interested persons on April 20, 2006, during the Programmatic Agreement Consultation Meeting held April 18-20, 2006, at New Town, ND. A pre-decisional Tribal Consultation on the preliminary draft Master Plan/EA was offered to the Tribes by letter; no Tribe requested a Tribal Consultation meeting.

#### **4.4. PUBLIC REVIEW AND COMMENT ON THE DRAFT MASTER PLAN/EA**

The Draft Garrison Dam/Lake Sakakawea Master Plan/EA was distributed to interested agencies, organizations and individuals for comment in July 2007. The Draft Master Plan/EA incorporated, as appropriate, review comments received on the preliminary draft from Tribal members; representatives of Federal, State, and local governmental agencies; and members of the Steering Committee.

News releases informed the general public that copies were available for public review on the Corps' Web site; and at the following public libraries:

- Alfred Dickey Public Library, 105 3<sup>rd</sup> St. SE, Jamestown, ND 58401
- Beulah Public Library, 116 North Central Ave., Beulah, ND 58523
- Bismarck Public Library, 515 N. Fifth St., Bismarck, ND 58501
- Dickinson Public Library, 139 3<sup>rd</sup> St. West, Dickinson, ND 58601
- Fargo Public Library 102 Third St. North, Fargo, ND 58102
- Fort Berthold Public Library, FBCC P.O. Box 788, New Town, ND 58763
- Garrison Public Library, P.O. Box 67, Garrison, ND 58540

- Grand Forks Public Library, 2110 Library Circle, Grand Forks, ND 58201
- Hazen Public Library, 203 E. Main, P.O. Box 471, Hazen, ND 58545
- Mandan Public Library, 609 W. Main St., Mandan, ND 58544
- McKenzie County Public Library, 112 2<sup>nd</sup> Ave. NE, Watford City, ND 58854
- McLean-Mercer Public Library, P.O. Box 505, Riverdale, ND 58565
- Minot Public Library, 516 2<sup>nd</sup> Ave. SW, Minot, ND 58701
- New Town Public Library, P.O. Box 308, New Town, ND 58763
- Sidney (Mont.) Public Library, 121 2<sup>nd</sup> Ave. NW, Sidney, MT 59270
- Williston Public Library, 1302 Davidson Dr., Williston, ND 58801

The text of the news release and the media that received it are provided in Appendix E. The news release announced that open-house public workshops on the draft Master Plan/EA would be held from 5:30 to 7:30 pm on the following dates and in the following places:

- August 13, 2007, Bismarck, ND, Bismarck Public Library, 515 N. 5<sup>th</sup> Street
- August 14, 2007, Dickinson, ND, Days Inn, 532 15<sup>th</sup> Street
- August 15, 2007, Williston, ND, Civic Center/Keel Boat at Spring Lake Park
- August 15, 2007, New Town, ND; Civic Center, 103 Soo Place
- August 16, 2007, Minot, ND, Civic Auditorium, 420 3<sup>rd</sup> Avenue, SW.

Information sheets and comment cards were provided at the open house public workshops for the Draft Master Plan/EA. The comment cards could be filled out and turned in at the workshop or mailed. Comments could also be provided by email to Project Manager Julie Price. Most comments from the general public were received orally at the public workshops and were written on large tablets. The comment cards and handouts provided at the public workshops, all public and agency comments on the Draft Master Plan/EA, and the Corps' responses to these comments are provided in Appendix E, Public Involvement.

## **5. LAND USE ALLOCATION AND LAND CLASSIFICATIONS**

### **5.1. INTRODUCTION**

This chapter presents the land use zoning plan for the Garrison Dam/Lake Sakakawea project area. As part of the planning process, the project lands were divided into individual management areas based on physical, administrative, operational, and use characteristics, and each area was assigned the most appropriate land classification. The land classification of an area governs the land uses, resource management activities, and facility development that are allowed. Combined with the project-wide and site-specific resource objectives presented in Chapters 1 and 6, respectively, this land use zoning provides a conceptual guide for the use, management, and development of all project lands to meet cultural resource and fish and wildlife needs while providing for public recreation use.

### **5.2. LAND ALLOCATION**

Land allocations identify the authorized purposes for which project lands were acquired. The entire Garrison Dam/Lake Sakakawea project has a land allocation of Project Operations. Project Operations lands are those lands acquired to provide safe, efficient operation of the project for its authorized purposes. These project purposes include flood control, navigation, irrigation, hydropower, municipal and industrial water supply, fish and wildlife, and recreation. Separable lands were not acquired for recreation or fish and wildlife purposes.

### **5.3. LAND CLASSIFICATIONS**

The Garrison Dam/Lake Sakakawea project lands are divided into management areas based on physical, administrative, and/or operational characteristics. Each management area is assigned a land classification that provides for the most appropriate types and levels of development and resource management. The classification process considers authorized project purposes, other laws and regulations, plans and programs of other entities, regional needs, public desires, and resource capabilities and suitabilities. Management and use of the lands assigned to each land classification must be compatible with the Project Operations allocation. The land classifications and the facility development, management and uses considered appropriate for lands assigned to each land classification are discussed below.

The land classifications at the Garrison Dam/Lake Sakakawea project are described below, and their locations are shown on Sheets 1 through 22 in Appendix A. The approximate acres in each land classification cited below were calculated in ArcView GIS without regard to actual relief or terrain elevation, using an elevation of approximately 1838 feet above mean sea level (msl) for Lake Sakakawea and approximately 1850 feet msl for Lake Audubon. Leases for specific management units may cite different acreages because they are based on the area above a different elevation, commonly 1850 feet msl. Management of lands below 1850 feet msl (or other

elevation cited in a lease or license) is compatible with the management and land classification of the adjacent lands lying above that elevation.

It is important to understand that the process to consider lands no longer needed to operate the project and administrative transfer to the Department of Interior, utilized elevation 1854 (maximum operating pool elevation) to establish acreage totals, while this Master Plan utilizes elevation 1838 base flood control elevation for acreage totals.

### **5.3.1. PROJECT OPERATIONS**

This classification includes lands required for the dam and associated structures, administrative offices, maintenance compounds, and other areas that are used to operate and maintain the Garrison Dam/Lake Sakakawea project. Where compatible with operational requirements, Project Operations lands may be used for wildlife habitat management, recreational use, or agricultural activities. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with operational requirements. The project includes approximately 1,999 acres of Project Operations lands.

### **5.3.2. RECREATION**

These lands are designated for intensive recreational use to accommodate and support the recreational needs and desires of project visitors. They include lands on which existing or planned major recreational facilities are located and allow for developed public recreation facilities, concession development, and high-density or high-impact recreational use. Facilities can include developed campgrounds, separate day use facilities, opportunities for several activities in the same general vicinity, lake access for boats, marina facilities and services, opportunities for the elderly and handicapped to participate in a variety of activities, and trees for shade and for wildlife use, as well as vegetative controls for shoreline and soil erosion. Criteria such as spacing, buffer zones, vegetative screening, and other considerations are used in the design of recreation facilities to ensure that visitors have adequate access to the lake and quality recreational experiences. Low-density recreation and wildlife management activities compatible with intensive recreation use are acceptable. No agricultural uses are permitted on these lands except on an interim basis for maintenance of scenic or open space values. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with recreational use. Approximately 7,410 acres of project lands are classified as Recreation.

### **5.3.3. MITIGATION**

Mitigation lands are acquired or designated specifically to offset losses of wildlife habitat associated with development of the project. The Garrison Dam/Lake Sakakawea project has no lands with this land classification. However, in many management units there are mitigation plantings of trees and shrubs, in addition to other measures to improve wildlife habitat such as wildlife food plots and waterfowl nesting structures, which are designed to offset the losses in wildlife habitat that have resulted from project construction and operation.



#### **5.3.4. ENVIRONMENTALLY SENSITIVE AREAS**

Environmentally sensitive areas are lands where scientific, ecological, cultural, or aesthetic features have been identified. These areas are available for public use, but the primary goals are preservation, education, and interpretation. Development of recreation facilities may be limited or prohibited to ensure that sensitive areas are not adversely impacted. Agricultural or grazing uses may be prohibited on lands with this classification. Approximately 13 acres of project lands are classified as Environmentally Sensitive.

#### **5.3.5. MULTIPLE RESOURCE MANAGEMENT LANDS**

This classification, which contains approximately 111,635 acres, includes lands managed for one or more of the following activities.

##### **5.3.5.1. Multiple Resource Management: Recreation – Low Density**

These lands emphasize providing opportunities for dispersed and/or low-impact recreation use. Facilities for site-specific, low-impact activities such as primitive camping and picnicking may be allowed. Facilities may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings. Manmade intrusions, including power lines, non-project roads, and water and sewer pipelines, may be permitted under conditions that minimize adverse effects on the natural environment. Vegetation management, including agricultural activities that do not greatly alter the natural character of the environment, are permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Where not in conflict with the safety of visitors and project personnel, hunting and fishing are allowed pursuant to Tribal and/or State fish and wildlife management regulations. Approximately 4,071 acres of project lands are classified as Multiple Resource Management: Recreation-Low Density.

##### **5.3.5.2. Multiple Resource Management: Wildlife Management General**

These lands are designated for wildlife management, although all project lands are managed for fish and wildlife habitat in conjunction with other land uses. Wildlife management lands contain valuable fish and/or wildlife habitat that is maintained and/or improved to be suitable for a designated species, a group of species, and/or a diversity of species. These areas may be administered by other public agencies under a lease, license, permit, or other formal agreement. Licenses, permits, and easements are not allowed for such manmade intrusions as pumping plants, pipelines, cables, transmission lines, or non-project roads. Exceptions to this policy are allowable where necessary for the public interest. Wildlife management lands are available for sightseeing, wildlife viewing, nature study, and hiking. Consumptive uses of wildlife, including hunting, fishing, and trapping, are allowed when compatible with the wildlife objectives for a given area and with Federal, Tribal, and/or State fish and wildlife management regulations. Approximately 70,361 acres of project lands are classified as Multiple Resource Management: Wildlife Management General.

#### **5.3.5.3. Multiple Resource Management: Vegetative Management**

Management activities in these areas focus on the protection and development of forest resources and vegetative cover, although all project lands are managed to protect and develop vegetative cover in conjunction with other land uses. These areas are available for agricultural, haying, and grazing leases that are consistent with good stewardship of soils and vegetative cover. Approximately 37,203 acres of project lands are classified as Vegetative Management.

#### **5.3.5.4. Multiple Resource Management: Inactive and/or Future Recreation Areas**

This sub-classification consists of lands for which recreation areas are planned for the future or lands that contain existing recreation areas that have been temporarily closed. No project lands are classified as Inactive and/or Future Recreation Areas.

#### **5.3.6. EASEMENT LANDS**

This classification consists of lands for which the Corps did not acquire fee title but did acquire the right to enter onto the property in connection with the operation of the project and in most cases, the right to occasionally flood the property. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the project. The Government has acquired easements on approximately 2,966 acres at the Garrison Dam/Lake Sakakawea project.

## **6. ALTERNATIVE RESOURCE PLANS AND A COMPARISON OF THEIR POTENTIAL ENVIRONMENTAL IMPACTS**

Chapter 6 describes and compares four alternative plans for managing, preserving, and developing/enhancing natural and man-made resources at Lake Sakakawea. These four alternative resource plans have identical land classifications and levels of development for most of the management units (MU's) or subunits of MU's at the Garrison Dam/Lake Sakakawea project. The differences among the four alternatives are itemized in the sections below.

### **6.1. PLAN FORMULATION**

To assess land classifications, the MU's in the Operational Management Plan (USACE 1996) as updated by approved Master Plan Supplements, which were also used in the Final Lake Sakakawea Cultural Resources Management Plan (USACE 2006), were divided into subunits based on land classification boundaries in the 1978 Master Plan and the General Plan.

Potential land classifications for each MU and its subunits were reviewed from the perspectives of 1) its land classification in the 1978 Master Plan as revised by approved Supplements to the Master Plan; 2) designations for Wildlife Management in the General Plan signed by the Corps, Department of Interior (U.S. Fish and Wildlife Service), and the North Dakota Game and Fish Department; 3) the land classification applicable to its existing use; and 4) another land classification or level of development that was considered more appropriate, based on problems and opportunities considered by Steering Committee members as they inventoried past and existing conditions and forecasted potential conditions 15 to 20 years into the future.

For the great majority of project lands, existing land uses were compatible with land classifications approved in the Master Plan, and the Steering Committee proposed no alternative land classifications. These areas have the same proposed land classifications and types and levels of development in all four alternative resource plans.

In a number of MU's or MU subunits, however, existing uses or uses proposed for the future by Steering Committee members differed from the approved land classifications. Land classifications of these MU's and MU subunits differ among the alternative resource plans; land classification assignments are discussed in the Description of Alternatives section of this subchapter. The alternative land classifications and alternative levels of development for each MU and subunit were considered by the Steering Committee; representatives of affected Tribes; and Federal, State, and local governmental agencies in assessing the alternative resource plans and selecting a resource plan. The selected resource plan represents the best combination of land classifications and types and levels of resource development, management, and conservation activities for the various MU's and MU subunits that would: 1) meet project purposes and public needs and desires; 2) be consistent with minimizing adverse environmental impacts and

ensuring environmental sustainability; and 3) be compatible with all applicable laws and regulations as well as regional plans.

## **6.2. DESCRIPTION OF ALTERNATIVES**

The four resource plan alternatives are described below:

### **6.2.1. THE NO ACTION ALTERNATIVE**

This involved maintaining the same land classification for each MU (or portion of each MU) as was provided in the 1978 Master Plan, as revised by the ten approved Supplements to the Master Plan listed in Appendix C, U.S. Army Corps of Engineers Reports. The 1955 General Plan was revised in the early 1980's to be consistent with the approved 1978 Master Plan.

### **6.2.2. THE LOW-DEVELOPMENT ALTERNATIVE**

For each MU or portion of each MU where existing uses or projected future uses were not consistent with the land classification in the 1978 Master Plan and Master Plan Supplements, the land classification under consideration by the Steering Committee that represented the lowest level of development was included in this alternative. Recreation was considered a more intensive use than any of the Multiple Resource Management (MRM) land classifications. Within MRM, Recreation-Low Density was considered more intensive than Vegetative Management, which in turn was considered more intensive than Wildlife Management General.

### **6.2.3. THE MEDIUM-DEVELOPMENT ALTERNATIVE**

This alternative included the land classification which the Steering Committee determined by consensus was the most appropriate land classification for each MU or MU subunit, taking into account project purposes, resource suitabilities and constraints, regional plans and goals, and expressed public needs and desires.

### **6.2.4. THE HIGH-DEVELOPMENT ALTERNATIVE**

For each MU or portion of each MU where existing uses or projected future uses were not consistent with the land classification in the 1978 Master Plan and Master Plan Supplements, the land classification under consideration by the Steering Committee that represented the highest or most intense level of development was included in this alternative.

The specific features of each alternative resource plan are compared in Table 6.2.1.

**Table 6.2.1. Features differing among the four alternative resource plans. Abbreviations for land classifications are: RIU, Recreation (Intensive Use); RLD, Multiple Resource Management (MRM) Recreation – Low Density; WM, MRM: Wildlife Management General; and VM, MRM: Vegetative Management. Abbreviations for management area names are: RA, Recreation Area; L-D RA, Low-Density Recreation Area; WA, Wildlife Area; WMA, Wildlife Management Area; and VM, Vegetative Management.**

<b>MU or MU Subunit (see Appendix A)</b>	<b>No-Action Alternative</b>	<b>Low-Develop. Alternative</b>	<b>Medium-Devel. Alternative</b>	<b>High-Devel. Alternative</b>
MU 11 – Riverdale South VM Area	RLD – 86 ac.	VM – 86 ac.	VM – 86 ac.	RLD – 86 ac.
MU 22 – Coleharbor Wildlife Area	RLD – 162 ac.	WM – 162 ac.	WM – 162 ac.	RLD – 162 ac.
MU 31 – DeTrobriand and WMA (Totten Trail WA portion)	RLD – 83 ac.	WM – 83 ac.	WM – 83 ac.	RLD – 83 ac.
MU 34 – Ft. Stevenson State Park (Ft. Stevenson North Grasslands portion)	RIU – 80 ac.	VM – 80 ac.	RIU – 80 ac.	RIU – 80 ac.
MU 37 – Garrison Bay WA (Garrison Mine WA portion)	WM – 10 ac.	WM – 10 ac.	WM – 10 ac.	RIU – 10 ac.
MU 46 – Schlichting Cabin Site Vicinity	VM – 26 ac.	VM – 26 ac.	RLD – 26 ac.	RLD – 26 ac.
MU 47 – Lutheran Bible Camp (part)	WM – 65 ac.	WM – 65 ac.	RIU – 65 ac.	RIU – 65 ac.
MU 55, 56, 57 – Douglas Creek: WA; RA; L-D RA	RLD – 592 ac.	RIU – 49 ac., WM – 543 ac.	RIU – 49 ac., RLD – 40 ac., WM – 503 ac.	RIU – 89 ac., WM – 503 ac.
MU 71 – Sanish Agric. Leases WA	WM – 2183 ac.	WM – 2183 ac.	WM – 2183 ac.	VM – 2183 ac.
MU 78, 79, 80 – Little Knife: Grasslands WA; Cottage Site Vicinity; L-D RA	RLD – 700 ac.	RLD – 6 ac., WM – 694 ac.	RLD – 136 ac., with restrictive development & regulatory signs WM – 564 ac.	RLD – 136 ac. VM – 564 ac.
MU 78 – Little Knife Grasslands WA (part)	RLD – 20 ac.	VM – 20 ac.	WM – 20 ac.	RLD – 20 ac.
MU 94 – Whitetail Bay Agric. Leases; MU 95 – Williston NG Training Site	RLD – 525 ac.	VM – 354 ac. WM – 171 ac. (to MU 96, Lewis & Clark WA)	VM – 127 ac., Agric. Leases; RLD – 227 ac., Nat. Guard Site; WM – 171 ac.	RLD – 525 ac.
MU 98 – Lewis and Clark Agric. Leases	RLD – 183 ac.	VM – 78 ac. WM – 105 ac. (to MU 101,	VM – 78 ac. WM – 105 ac. (to MU 101, Camp	RLD – 183 ac.

<b>MU or MU Subunit (see Appendix A)</b>	<b>No-Action Alternative</b>	<b>Low-Develop. Alternative</b>	<b>Medium-Devel. Alternative</b>	<b>High-Devel. Alternative</b>
		Camp Cherith WA)	Cherith WA)	
MU 104 – Williston S. Ag. Leases (part)	RLD – 30 ac.	VM – 30 ac.	VM – 30 ac.	RLD – 30 ac.
MU 109 – Little Muddy WA (part)	RLD–355 ac.	WM – 355 ac.	WM – 355 ac.	RLD –355 ac.
MU 112 – Little Muddy RA	RLD – 3 ac.	WM – 3 ac.	RIU – 3 ac.	RIU – 3 ac.
MU 118 – East Valley Agric./Oil Leases WA (part)	WM–2700 ac.	WM–2700 ac.	WM –2700 ac.	VM– 2700 ac.
MU 119 – Trenton WMA (part)	RLD –124 ac.	WM – 124 ac.	WM – 124 ac.	RLD –124 ac.
MU 120 – Lake Trenton RA	RLD –132 ac.	RLD –132 ac.	RIU – 132 ac.	RIU – 132 ac.
MU 124 – Camp Creek East Agric. Leases WA	WM – 1057 acres	WM – 1057 acres	WM – 1057 acres	VM – 1057 acres
MU 129 – Tobacco Garden Ag. Leases (Sand Ck. Bay part)	RLD –190 ac.	VM – 190 ac.	VM – 190 ac.	RLD –190 ac.
MU 136 – Charlson L-D RA	RLD – 7 ac.	VM – 7 ac.	RLD – 7 ac.	RLD – 7 ac.
MU 138 – Charlson /Antelope Ck Ag./ Oil Leases WA (pt)	RLD – 20 ac.	WM – 20 ac.	WM – 20 ac.	RLD – 20 ac.
MU 147 – Little Mis- souri Grasslands WA	VM – 3066 ac (Natural Area)	WM – 3066 ac	WM – 3066 ac.	VM – 3066 ac
MU 148 – Little Missouri Grasslands L-D RA	RLD–1146 ac	VM –1146 ac.	RLD – 1146 ac.	RLD–1146 ac
MU 153 – Bear Creek Bay L-D RA	RLD –349 ac.	VM – 349 ac.	RLD – 349 ac.	RLD –349 ac.
MU 159 – Hille WMA (Expansion Bay portion)	RLD –200 ac.	WM – 200 ac.	WM – 200 ac.	RLD –200 ac.
MU 165 – Hazen /Walleye Bay RA (Walleye Bay part)	VM – 74 ac.	VM – 74 ac.	RIU – 74 ac.	RIU – 74 ac.
MU 167 –Ellwein Estates Subdivision Vicinity (part)	VM – 5 ac.	VM – 5 ac.	RLD – 5 ac.	RLD – 5 ac.
MU 169 – Rolling Hills Estates Vicin.	VM – 12 ac.	VM – 12 ac.	RLD – 12 ac.	RLD – 12 ac.
MU 171 – Sakaka- wea L-D RA	RLD –152 ac.	WM – 152 ac.	RLD – 152 ac.	RLD –152 ac.
MU 175– Pick City #2 Grassland WA	RLD –159 ac.	WM – 159 ac.	WM – 159 ac.	RLD –159 ac.

<b>MU or MU Subunit (see Appendix A)</b>	<b>No-Action Alternative</b>	<b>Low-Develop. Alternative</b>	<b>Medium-Devel. Alternative</b>	<b>High-Devel. Alternative</b>
Total Acres in Each Land Classification:				
Recreation	80	49	403	453
MRM: Recreation – Low Density	5,218	138	2,100	3,970
MRM: Vegetative Management	3,183	2,457	511	9,570
MRM: Wildlife Management Gen.	6,015	11,852	11,482	503
Acres of Land that Would Be Changed from One Classification to Another				
WM → VM	0	0	0	5,940
WM → RLD	0	0	0	0
WM → RIU	0	0	65	75
VM → WM	0	3,066	3,066	0
VM → RLD	0	0	43	43
VM → RIU	0	0	74	74
RLD → WM	0	2,771	2,466	503
RLD → VM	0	2,260	511	564
RLD → RIU	0	49	184	224
RIU → WM	0	0	0	0
RIU → VM	0	80	0	0
RIU → RLD	0	0	0	0

The No-Action Alternative includes more acres in low-density recreation than the other alternatives. The acres in intensive-use recreation in the No-Action Alternative exceed only those in the Low-Development Alternative. The No-Action Alternative has fewer acres in wildlife management and more acres in vegetative management than the Low- and Medium-Development alternatives.

The Low-Development Alternative includes fewer acres in the two recreation land classifications, and more wildlife management acres, than the other alternatives. It has fewer vegetative management acres than the No-Action or High-Development Alternative but more than the Medium-Development alternatives.

The Medium-Development Alternative contains more acres in the two recreation land classifications combined than the Low-Development Alternative but less than the other two alternatives. It contains almost as many wildlife management acres as the Low-Development Alternative and more than the No-Action and High-Development

alternatives. It contains fewer vegetative management acres than the other three alternatives.

The High-Development Alternative contains fewer acres in the two recreation land classifications combined than the No-Action Alternative but more than the other two alternatives. The High-Development Alternative has fewer acres in wildlife management and more acres in vegetative management than the other three alternatives.

### **6.3. EVALUATION AND COMPARISON OF POTENTIAL EFFECTS OF THE ALTERNATIVES (BENEFICIAL, DETRIMENTAL, AND CUMULATIVE EFFECTS)**

#### **6.3.1. THE NO ACTION ALTERNATIVE**

Under the No Action Alternative, no MU at the Garrison Project would change in land classification. Of the MU acres proposed for reclassification, 80 acres of land would remain classified as Recreation – Intensive Use (RIU); 5,218 acres would remain classified as Recreation – Low Density (RLD); 3,183 acres would remain classified as Vegetative Management (VM); and 6,015 acres would remain classified as Wildlife Management General (WM). These lands are in addition to the 106,561 acres of project lands that are not being considered for reclassification. The relative effects of this plan on the environment and visitation patterns compared to the previous Master Plan would remain similar.

#### **6.3.2. THE LOW-DEVELOPMENT ALTERNATIVE**

Under the Low-Development Alternative, 3,066 acres of VM units would be reclassified to WM. In addition, 5,031 acres of RLD lands would be reclassified for less intensive use (2,260 acres to VM and 2,771 acres to WM) and 49 acres would be reclassified for more intensive use, RIU (Table 6.2.1). Among the four alternatives, this alternative has the largest amount of RLD land that would be reclassified and would result in the least development. The project would have fewer facilities typical of RLD units (Table 6.2.1), such as picnic shelters and tables, fire rings, and pit or vault toilets. As a result, there would be fewer places for people to congregate. The units would also require less maintenance and visits by Corps employees. Resource objectives and development needs would emphasize wildlife habitat enhancement to a greater extent than is emphasized under RLD. Disturbance to wildlife and the environment from humans would be reduced the most, and wildlife habitat increased the most, by this alternative. This alternative would have the least impacts to water quality, noise, air quality, and cultural resources because construction activities and concentrated human use would be minimized. However, this alternative would not meet public needs and desires for more recreation areas that include facilities for camping and picnicking; therefore, an increase in visitation could result in some recreation areas exceeding carrying capacity.



**Table 6.3.1. Activities and facilities allowed in the majority of management units classified as Recreation (intensive use) (RIU), Recreation – Low Density (RLD), Vegetative Management (VM), and Wildlife Management General (WM).**

	<b>Recreation (intensive use) (RIU)</b>	<b>Recreation – Low Density (RLD)</b>	<b>Vegetative Management (VM)</b>	<b>Wildlife Management General (WM)</b>
<b>Access</b>				
Access for hunting on adjacent project lands	X	X	X	X
Access roads	X	X	X	X
Automobile access	X	X	X	X
Boat fueling facilities	X			
Boat launching facilities (docks and ramps)	X	X		
Parking areas	X	X		X
Paved trails	X	X		
Shoreline access for fishing	X	X	X	X
Unpaved trails	X	X	X	X
<b>Land management</b>				
Farming			X*	X*
Grazing			X*	X*
Haying		X*	X*	X*
<b>Recreational activities</b>				
Boating – dock or ramp use	X	X		
Camping	X	X	X	X
Picnicking	X	X	X	X
Fishing	X <sup>#</sup>	X <sup>#</sup>	X	X
Hunting	X <sup>#</sup>	X <sup>#</sup>	X	X
Non-consumptive uses (hiking, birdwatching, sightseeing, wildlife observation)	X	X	X	X
<b>Recreational facilities</b>				
Amphitheater	X			
Bathhouse	X			
Benches	X	X	X	X
Campground - developed	X			
Campground - primitive	X	X	X	X
Clubhouse	X			
Concessionaire building	X			
Dump station	X			
Fire rings	X	X		
Fish cleaning station	X			
Golf course	X			
Grills	X	X		
Interpretive areas	X	X		
Lodge	X			
Marina	X			

	<b>Recreation (intensive use) (RIU)</b>	<b>Recreation – Low Density (RLD)</b>	<b>Vegetative Management (VM)</b>	<b>Wildlife Management General (WM)</b>
<b>Recreational facilities</b>				
Nature centers	X			
Picnic shelters	X	X		
Picnic tables	X	X		
Playgrounds	X			
Pit toilets	X	X		
Potable water	X	X		
Recreational vehicle (RV) pads	X			
Restrooms	X			
Showers	X			
Sports areas	X			
Storage buildings	X	X		
Swimming areas	X			
Vault toilets	X	X		
Volleyball court	X			
Waste receptacles	X	X	X	X
<b>Utilities</b>				
Cables	X			
Overhead electric and transmission lines	X	X*		
Pumping plants	X			
Underground or exposed pipelines	X	X		
Underground utilities (water, sewer, electric)	X	X*		
<b>Vegetation</b>				
Shade trees	X	X	X	X
Turf grass	X	X		
Vegetation for shoreline erosion	X	X	X	X
Vegetation for wildlife habitat and food supply	X	X	X	X

\* Permitted under conditions that minimize adverse effects on the natural environment.

# Where not in conflict with the safety of visitors and project personnel, hunting and fishing are allowed pursuant to Tribal and/or State fish and wildlife management regulations. Some RIU or RLD areas do not allow hunting.

The reclassification of 49 acres at Douglas Creek Wildlife Area (WA) (MU 55, 56, 57) to RIU would have a relatively minor effect at the project by increasing the concentration of people and causing more disturbance to wildlife and the environment in the vicinity of this WMA. In addition, this 49 acres was already unofficially reclassified as RIU and contains a fully developed campground.

Eighty acres of RIU land at Fort Stevenson State Park (MU 34), consisting of grasslands in the northern portion of the park, would be reclassified for less intensive use, VM. This

is the only alternative in which these 80 acres would be reclassified, and would help protect mixed grasslands and wildlife that currently use the area, such as white-tailed deer, red fox, raccoon, beaver, badger, mink, rabbit, skunk, prairie dogs, ground squirrels, and other rodent species. However, this reclassification would not allow a primitive group camping area, which is needed to meet public needs, to be developed at Fort Stevenson State Park.

### **6.3.3. THE MEDIUM-DEVELOPMENT ALTERNATIVE**

Under the Medium-Development Alternative, 65 acres of WM lands at the Lutheran Bible Camp (MU 47) would be reclassified for more intensive use, RIU. This is a substantial increase in the degree of the development allowed in this area of the management unit. However, because the majority of the Lutheran Bible Camp is already RIU and is bordered to the west by another RIU unit, the Triangle YMCA Camp (MU 48), the local effect of this land reclassification is relatively minor. In addition, the 65 acres is already under lease to the Lutheran Bible Camp.

For VM areas, 117 acres would be reclassified for more intensive use: 43 acres to RLD, and 74 acres to RIU. This is greater than under the No Action and Low-Development alternatives, but the same as the High-Development alternative. This land reclassification would likely disturb and displace some wildlife during and after the time period when recreation facilities are being constructed at the four affected MU's: Schlichting Cabin Site vicinity, MU 46; Hazen/Walleye Bay RA, MU 165; Ellwein Estates Subdivision vicinity, MU 167; and Rolling Hills Estates vicinity, MU 169. However, 3,066 acres would be reclassified to WM, a less intensive use, over 26 times the VM acres reclassified for more intensive use.

For RLD lands, 2,977 acres would be reclassified for less intensive use (2,466 acres to WM, and 511 acres to VM), and 184 acres would be reclassified for more intensive use, to RIU. For RLD, this alternative has an intermediate effect on wildlife and the environment, since the amount of acres classified for less intensive use, and the amount of acres classified for more intensive use, is about halfway between the Low-Development and High-Development alternatives. There would be more impacts on water quality, noise, air quality, and cultural resources than the Low-Development Alternative because comparatively more land would be reclassified to RLD and RIU, opening up more opportunities for the construction of recreation facilities such as restrooms, vault toilets, developed campgrounds, and picnic shelters. However, considering that 43 acres of VM lands would be changed to RLD and a total of 323 acres of lands would be changed to RIU, at a project that contains 121,057 acres of lands, the impacts of this alternative are relatively small; in addition, the changes to RIU will enable project recreation areas to support increased visitation levels that are projected to occur in the future without exceeding carrying capacity.

### **6.3.4. THE HIGH-DEVELOPMENT ALTERNATIVE**

Under the High-Development Alternative, 6,015 acres of WM lands would be reclassified for more intensive use (5,940 acres to VM and 75 acres to RIU). This is by far the greatest amount of WM land that would be reclassified under an alternative.

Because the majority of the land under this change would be to VM lands, which are moderately more intensively developed than WM lands, with more emphasis on agricultural, haying, and grazing leases (see Chapter 5), the effects of this reclassification would not be as substantial as if much of the WM lands were reclassified to RLD or RIU. However, compared to a WM classification, more wildlife would be disturbed by farm equipment that is used for harvesting and haying and by grazing cattle, which may degrade wildlife habitat.

For VM lands, 117 acres would be classified for more intensive use (43 acres to RLD and 74 acres to RIU). This is the same amount as the Medium-Development alternative. As mentioned under that alternative, this land reclassification would likely disturb and displace some wildlife at the four affected MU's when recreation facilities are built.

For RLD lands, 1,067 acres would be reclassified for less intensive use (503 acres to WM, 564 acres to VM), and 224 acres would be reclassified for more intensive use, to RIU. Among the alternatives, this alternative has the greatest amount of RLD land that would be reclassified to RIU and the least amount of RLD that would be reclassified for less intensive use. This alternative has the highest amount of disturbance to wildlife and the environment. The greater amount of land allocated to RIU would mean more recreation facilities that draw large numbers of people, such as concessionaires, marinas, and developed campgrounds. The greater concentrations of people would mean more noise, garbage, and removal of vegetation and wildlife habitat. The removal of vegetation could increase soil erosion and construction could affect water quality because ground-disturbing activities may increase the amount of sediment going into the lake. Construction activities at recreation areas could have temporary impacts on air quality because of dust stirred up from construction equipment. Cultural resource impacts would be avoided by consulting the Lake Sakakawea Cultural Resources Management Plan and requiring the contractor to report any cultural artifacts discovered during ground-disturbing activities.

As noted for the Medium-Development Alternative, this alternative would have relatively minor impacts at the project since the classification of a relatively small amount of land at the project would be reclassified to a more intensive recreation classification, 43 acres to RLD and 373 acres to RIU, compared to 121,057 acres of project lands. A fairly large amount of land, 5,940 acres, would be changed to a more intense use of VM. Emissions from farming equipment could have minor impacts on air quality and farm equipment could have minor impacts on noise. Water quality could be impacted from runoff of pesticides and fecal material from agricultural and grazing land. Impacts to cultural resources would be avoided by consulting the Lake Sakakawea Cultural Resources Management Plan before plowing and by requiring lessees to report any cultural artifacts discovered during ground-disturbing activities. Like the Medium-Development Alternative, this alternative would fulfill public desires for greater recreation facilities at the project that would enable increased visitation levels to be accommodated in the future without exceeding carrying capacity.

### **6.3.5. CUMULATIVE EFFECTS**

Cumulative effects are those that result from the incremental effects of the action when added to past, present, and reasonably foreseeable future actions within a region. The proposed alternative plans affect the management of land surrounding Lake Sakakawea in different ways. The scope of this cumulative effects analysis includes the impact of land reclassifications under the four alternative plans on lands surrounding Lake Sakakawea.

#### **6.3.5.1. Past Actions**

Numerous cumulative effects from previous actions have occurred throughout the Lake Sakakawea area and have impacted regional wildlife habitat and the environment. Construction of Garrison Dam; filling of the Lake Sakakawea reservoir; construction of Fort Peck Dam upstream of Lake Sakakawea on the Missouri River; management of the Missouri River for flood control, navigation, water supply, and hydropower; development of the Missouri River flood plain for agricultural and residential uses; and alteration of the Missouri River channel have caused dramatic changes to the entire Missouri River system. These anthropogenic changes have caused cumulative effects to resources, ecosystems, and human communities. Without a complete restoration of the Missouri River basin to its original ecological condition, these cumulative effects will not be reversed. The Missouri River system is now primarily a passive, controlled system with dramatically reduced natural communities and habitats. Some wildlife habitat mitigation activities have occurred at Lake Sakakawea, such as the creation of woody habitat and wetlands to mitigate for those habitats that have been inundated by the lake.

#### **6.3.5.2. Cumulative Effects of the Four Alternatives**

##### **6.3.5.2.1. The No Action Alternative**

Under the No Action Alternative, implementation of existing land classifications in the updated Master Plan/EA would incrementally reduce the cumulative effects that have occurred. Resource objectives and development needs for the MU's are designed to also compensate for the increased visitor use and recreational use of the project area, through greater environmental protections of existing habitats, restoration of native plant communities, more stringent development guidelines, and greater maintenance of sustainable resources.

##### **6.3.5.2.2. The Low-Development Alternative**

The Low-Development Alternative would have the greatest incremental impact in reducing the cumulative effects that have occurred on wildlife habitat surrounding Lake Sakakawea. By reducing the amount of recreation facilities, this alternative would reverse some of the anthropogenic changes that have been made on the landscape. The greater amount of vegetation plantings and extent of wildlife habitat enhancement and reduced amount of disturbance to wildlife from recreation activities under this alternative would incrementally benefit terrestrial and riparian wildlife in the Lake Sakakawea area.

#### **6.3.5.2.3. The Medium-Development Alternative**

The Medium-Development Alternative would have an intermediate incremental impact in reducing the cumulative effects that have occurred on wildlife habitat surrounding Lake Sakakawea. Although most VM and WM lands would not be changed to a more intensive land use classification, and many RLD lands would be converted to WM or VM, thus continuing to be managed for habitat improvement and restoration, some lands would be reclassified for RLD and RIU. Visitor use would increase in these areas, having an incremental impact of adding to or redistributing human disturbance at the project from visitation to recreation areas.

#### **6.3.5.2.4. The High-Development Alternative**

The High-Development Alternative would contribute to, rather than reduce, the cumulative effects that have occurred on wildlife habitat surrounding Lake Sakakawea. This alternative reclassifies substantial amounts of land to VM, which incrementally adds to the amount of land that has been converted from wildlife habitat to agricultural uses in the vicinity of Lake Sakakawea. It also incrementally adds to the amount of land that would be open to concentrated densities of people around recreation facilities, which increases environmental degradation in the area.

#### **6.3.5.3. Cumulative Conclusion**

Although the Medium-Development Alternative does not have the greatest incremental impact on reducing cumulative effects from past anthropogenic influences in the region, it was selected because it has the best combination of land classifications and types and levels of resource development, management, and conservation activities that: 1) meets project purposes and public needs and desires; 2) is consistent with minimizing adverse environmental impacts and ensuring environmental sustainability; and 3) is compatible with all applicable laws and regulations as well as regional plans.

The Master Plan/EA, which includes specifics of the Medium-Development Alternative for all MU's in Chapter 7, provides greater awareness of potential cumulative effects and may, as a result of the updated management activities and land classification revisions, incrementally or slightly reduce cumulative effects. Within the updated Master Plan/EA, objectives for resource management have been identified and are realistically attainable goals for the use, development, and management of natural and manmade resources. Guidelines for obtaining maximum public benefits while minimizing adverse impacts and protecting and enhancing environmental quality have been included in the updated Master Plan/EA. Resource objectives and development needs have been developed for each management area at Lake Sakakawea with full consideration of authorized project purposes, applicable Federal laws and directives, resource capabilities, regional needs, plans and goals of regional and local governmental units, and expressed public desires.

#### **6.4. COMPLIANCE OF THE MASTER PLAN/EA WITH THE CORPS' SEVEN ENVIRONMENTAL OPERATING PRINCIPLES**

The Garrison Dam/Lake Sakakawea Master Plan/Programmatic Environmental Assessment (Master Plan/EA) fulfills all seven environmental operating principles (EOP's), as explained in detail below:

##### **6.4.1. EOP #1. STRIVE TO ACHIEVE ENVIRONMENTAL SUSTAINABILITY. AN ENVIRONMENT MAINTAINED IN A HEALTHY, DIVERSE, AND SUSTAINABLE CONDITION IS NECESSARY TO SUPPORT LIFE.**

Collaborative efforts with Federal agencies and State and local governments are implemented wherever possible for development, management, and monitoring of resources at Corps reservoir projects.

Sustainable development is ensured into the future through environmental stewardship epitomized by resource objectives identified for each area in the Master Plan, and development needs that are consistent with these resource objectives.

Monitoring (including inspections) allows feedback to determine whether adaptive management efforts are needed to ensure the balanced human environment envisioned in the Master Plan and supported by the EA. Water quality monitoring is conducted in general areas by the Corps and near beaches by State or local entities managing the recreation area where the beach is located. The Corps multidisciplinary staff conducts periodic inspections of each area, structure, and facility used to operate and maintain the project to ensure management and development activities are in accordance with Corps-approved plans and current regulations. These plans include Annual Management Plans and longer-term management plans prepared by lessees for specific areas and the Corps' project-wide Operational Management Plan, including appendices such as the Shoreline Management Plan.

The Master Plan/EA identifies the most sustainable water resource system among several alternatives. These are based on contribution to the objectives of society (regional plans/needs and expressed public desires) now and in the future (forecasted for the next 15 to 20 years) that maintain their ecological, environmental, and hydrological integrity (consistency with project purposes, the National Environmental Policy Act, and other laws and regulations).

The Master Plan/EA includes historic, current, and forecasted future environmental and economic considerations in selection of a concept plan. The plan considers various alternatives that must improve the quality of life by meeting regional recreational needs while protecting biological, geological, cultural, and historical resources. Planning (Master Plan updates every 5 years), design and construction (site-specific EA requirements for development proposals), and operation and maintenance (inspections to ensure compliance with the terms of real estate instruments and other Corps regulations) function in an integrated manner to ensure maximum quality of life for present and future generations.

**6.4.2. EOP #2. RECOGNIZE THE INTERDEPENDENCE OF LIFE AND THE PHYSICAL ENVIRONMENT, AND CONSIDER ENVIRONMENTAL CONSEQUENCES OF CORPS PROGRAMS AND ACTIVITIES IN ALL APPROPRIATE CIRCUMSTANCES.**

In the Master Plan/EA, the Corps considers the interrelationships among all the factors, including activities of humans, habits and habitats of fish and wildlife, and abiotic factors, in determining the most suitable land classification and types and levels of development (if any) for each area of the reservoir project.

The Master Plan/EA identifies a number of important values of freshwater ecosystems in the reservoir project and considers them all in the planning process. The reservoir is a valuable source of drinking and irrigation water. The Master Plan/EA includes information regarding the issuing of intake permits through the corps regulatory process and aiding municipal and rural water systems to ensure functionality of intakes during drought conditions. It also discusses the solution to the problem of balancing economic needs for cattle to access drinking water with environmental issues (shoreline erosion, water quality problems, and potential safety hazards). The Master Plan/EA discusses the great value of the reservoir area for food production: hunting, fishing, and trapping; agricultural and grazing activities; wildlife food plantings; and predator-prey relationships. The Master Plan/EA emphasizes the value of freshwater ecosystems at the reservoir project for recreation and provides a complete analysis of past, present, and forecasted future recreation visitation and activity data. The Master Plan/EA explains that the reservoir benefits employment in the region through recreation-related commercial enterprises on and off reservoir project lands, during both the construction and operation phases.

The EA expressly considers the environmental consequences of: proposed land uses; proposed development of recreation facilities and wildlife habitat; and anticipated activities of humans, fish, and wildlife. These consequences are considered from both the scientific perspective (using the latest scientific data and latest projections of population and recreation activity participation) and legal perspective in the Master Plan/EA as well as in the Operational Management Plan and appended Shoreline Management Plan.

The Master Plan/EA strives to secure adequate information on the environmental consequences of all reasonable alternatives to objectively assess them in the decision process to identify the most appropriate land classifications and the most suitable types and levels of development for all areas of the reservoir project.

**6.4.3. EOP #3. SEEK BALANCE AND SYNERGY AMONG HUMAN DEVELOPMENT ACTIVITIES AND NATURAL SYSTEMS BY DESIGNING ECONOMIC AND ENVIRONMENTAL SOLUTIONS THAT SUPPORT AND REINFORCE ONE ANOTHER.**

Several resource objectives and development needs seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce each other. For example, one vegetative management objective is to balance wild land values and public uses with planning, design, development, and management stewardship practices; a wildlife management area development need is to develop and manage project resources to



support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values; and a development need for recreation areas is to manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Agencies that manage Corps lands also balance economic and environmental solutions. For example, the NDGFD has closed a number of access roads over the last 10 to 15 years to improve the value of wildlife habitat in the WMA's along Lake Sakakawea. Road closures reduce disturbance to wildlife; control off-trail and all-terrain vehicle (ATV) usage; control and limit vehicular camping use on the WMA's; and address site-specific problems such as garbage dumping and littering, partying, and other illegal activities. These restrictions have dramatically improved the value of these areas to wildlife, protected the integrity of wildlife habitat, increased hunting opportunities, and provided users with more undisturbed areas of wildlife habitat.

**6.4.4. EOP #4. CONTINUE TO ACCEPT CORPORATE RESPONSIBILITY AND ACCOUNTABILITY UNDER THE LAW FOR ACTIVITIES AND DECISIONS UNDER OUR CONTROL THAT IMPACT HUMAN HEALTH AND WELFARE AND THE CONTINUED VIABILITY OF NATURAL SYSTEMS.**

The Master Plan/EA fulfills requirements of the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321-4347), which establishes a national policy to "...encourage productive and enjoyable harmony between man and his environment; promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enrich the understanding of ecological systems and natural resources important to the Nation..." The Master Plan/EA fulfills NEPA by:

1) describing the existing environmental conditions, including air quality, water quality, vegetation, fish and wildlife, and threatened and endangered species; and 2) by identifying and comparing the incremental and cumulative effects of the No-Action Alternative, Low-Development Alternative, Medium-Development Alternative, and High-Development Alternative plans for resource management and use.

The Master Plan/EA is also in compliance with other applicable environmental and cultural resource laws and executive orders, including the Clean Air Act, Clean Water Act, Endangered Species Act, and Archaeological Resources Protection Act, among others, as discussed in the Pertinent Public Laws and Compliance with Environmental Statutes section in Chapter 2 of the Master Plan/EA.

The Corps also accepts corporate responsibility and accountability for following federal laws in regard to decisions related to development and management activities undertaken in the future in accordance with the Master Plan/EA. Garrison project staff complete a NEPA checklist for any ground-disturbing activity such as the installation of a vault toilet or parking lot. Project staff also follow procedures in the Lake Sakakawea Cultural Resources Management Plan in order to comply with cultural resources laws and have developed an Environmental Management System (EMS), which ensures that employees are aware of the environmental laws and values affecting the project. In addition, site-specific development proposals must be accompanied by an EA prior to interdisciplinary review at the Garrison project office and Omaha District Office, any consultation desired

by the Tribes in accordance with the Programmatic Agreement (PA), and the Corps' issuance of a FONSI and declaration of land availability for the activities proposed.

The Master Plan/EA fulfills stipulations of the Final Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act, as amended (PA) (USACE 2004). The information for each MU provided in the Resource Plan (Chapter 7) ensures that the Corps follows the stipulation of adhering to the Lake Sakakawea Cultural Resources Management Plan. The information on each MU in Chapter 7 includes the statement "Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts." This ensures that any potential development activities will avoid impacting cultural resources. Each MU also has as a resource objective "Preserve, monitor, and protect any cultural resources" and as a development need "Provide appropriate protection for any cultural resources." The Master Plan/EA follows the stipulation that any affected Tribes be provided the opportunity to participate in the development and implementation of management plans. Representatives of the Three Affiliated Tribes, the Turtle Mountain Band of Chippewa, and the Trenton Indian Service Area were on the Steering Committee and have had the opportunity to participate in the development of the Master Plan/EA. The Corps and the signatories of the PA are currently working on a monitoring and enforcement plan, of which Lake Sakakawea is a part. The Corps is working hard to coordinate with all law enforcement agencies to establish a network of individuals that would be able to respond quickly to incidents of looting and artifact collecting. Progress is being made and the Corps looks forward to completion and implementation of the plan.

**6.4.5. EOP #5. SEEK WAYS AND MEANS TO ASSESS AND MITIGATE CUMULATIVE IMPACTS TO THE ENVIRONMENT; BRING SYSTEMS APPROACHES TO THE FULL LIFE CYCLE OF OUR PROCESSES AND WORK.**

As noted earlier in this section, the cumulative impacts from the selected Medium-Development Alternative would include the incremental effects from additional visitation to areas that are reclassified to RLD or RIU areas, increasing human disturbance of the local environment and wildlife in these areas in addition to that experienced from previous development at the project. These adverse impacts will partially be offset because recreation areas often have as a resource objective and development need the creation of wildlife habitat in appropriate areas. In addition, project staff will evaluate the construction of any new recreation facilities under NEPA to see if they are categorically excluded from further analysis or if they require an EA to determine their impact on the environment. Site-specific proposals for development will also be offered to the Tribes for consultation, in accordance with the PA, and will be approved only if it is determined that potential impacts are not significant. The Corps and non-Federal lessees will manage recreation areas in accordance with pertinent environmental laws, the EMS, and the EOP's, which will help reduce some of the wildlife and vegetation impacts to the area from human disturbance.

**6.4.6. EOP #6. BUILD AND SHARE AN INTEGRATED SCIENTIFIC, ECONOMIC, AND SOCIAL KNOWLEDGE BASE THAT SUPPORTS A GREATER UNDERSTANDING OF THE ENVIRONMENT AND IMPACTS OF OUR WORK.**

As noted under EOP #4, the Garrison project staff has developed an EMS, which is a series of management processes and procedures that allow the Corps to identify, mitigate, control, and reduce any environmental impacts from the Corps' day-to-day business activities, to be in compliance with Executive Order 13148. The Corps has developed an environmental policy statement; developed a plan for system implementation; completed a list of environmental aspects and impacts; established objectives, targets, and programs; conducted EMS awareness training; and completed a management review of the EMS. Garrison project staff has developed and implemented an EMS Plan, dated 31 December 2005, which addresses these requirements. The EMS supports a greater understanding of the environment and impacts of our work.

The Garrison project staff coordinates extensively with other agencies and organizations to develop integrated scientific, economic, and social knowledge bases that support a greater understanding of the environment and impacts of our work. For example, the Corps is part of an ongoing Noxious Weed Task Force initiative that includes Tribal, Federal, State, and local entities, including the Friends of Lake Sakakawea (FOLS). This task force strategically targets areas for noxious weed control. The vast majority of the funds available through the Corps noxious weed control program have been used to support monitoring and spraying efforts by county weed boards, NDGFD, and private contractors. In addition, the Corps has funded programs to implement biological-control measures. Land ownership does not affect the total expenses for noxious weeds in the Task Force area.

The Corps is also active in educating the public about the environment and impacts of our work. The Corps provides interpretation of the natural and unique ecological resources found in the area at the Corps Administration Building. Several MU's provide interpretive areas or facilities (such as signage or kiosks) that communicate information about local resources. The Corps also works with the NDGFD, NDPRD, and local entities such as park boards, to determine which areas will receive aquatic nuisance species signs, which educate the public about identifying and removing aquatic nuisance species from their boats.

**6.4.7. EOP #7. RESPECT THE VIEWS OF INDIVIDUALS AND GROUPS INTERESTED IN CORPS ACTIVITIES, LISTEN TO THEM ACTIVELY, AND LEARN FROM THEIR PERSPECTIVE IN THE SEARCH TO FIND INNOVATIVE WIN-WIN SOLUTIONS TO THE NATION'S PROBLEMS THAT ALSO PROTECT AND ENHANCE THE ENVIRONMENT.**

The Corps has been proactive in respecting the views of individuals and groups interested in the Master Plan/EA. During the summer and early fall of 2005, the Master Plan/EA team held an agency scoping meeting and four public workshops designed to gain local insights concerning use of the land base surrounding Lake Sakakawea. Additionally, public comment cards were available at several public locations around the lake providing an opportunity to ask questions or make comments concerning the use of the land base. The Corps, members of the Lake Sakakawea Master Plan/EA Steering Committee, and Federal and State land managing agencies worked together to develop

responses to public comments, which were posted on the Corps' Lake Sakakawea Master Plan Update Web site. The Web site also contains an "Ask a Question" link to make it easy for members of the public to email the Corps with questions at any time.

The purpose and role of the Steering Committee was to enhance, but not replace, public input by providing a cross-section of local expertise to represent local and regional concerns during the master planning process. The following agencies/organizations, which included a variety of perspectives regarding management and development activities considered appropriate for the Garrison Dam/Lake Sakakawea project, were represented on the Steering Committee:

- U.S. Army Corps of Engineers, Omaha District and Garrison Project Office
- U.S. Fish and Wildlife Service
- Bureau of Indian Affairs
- Three Affiliated Tribes
- Turtle Mountain Band of Chippewa
- Trenton Indian Service Area
- North Dakota Department of Agriculture
- North Dakota Game and Fish Department
- North Dakota Parks and Recreation Department
- North Dakota State Water Commission
- North Dakota State Historical Preservation Office
- Missouri River Joint Water Board
- North Dakota Chapter of The Wildlife Society
- North Dakota Sport Fishing Congress
- The Friends of Lake Sakakawea
- Office of Senator Byron Dorgan

The Steering Committee met an average of once every 2 months over the 2 years prior to preparation of the Preliminary Draft Master Plan/EA. Committee members took information from the meetings back to the steering organizations they represented and brought back responses and comments based on their organization's perspective. Steering committee members provided valuable input (almost all of which was used by the Corps) regarding: project-wide resource objectives; the organization, format, and content of all chapters and subchapters; and the most appropriate land classifications of each MU in the selected Resource Plan. The Steering Committee was also heavily involved in planning, organizing, and coordinating the public workshops for receiving scoping comments on the Master Plan/EA from the general public.

## 7. PLAN FOR RESOURCE USE, MANAGEMENT, AND DEVELOPMENT

This chapter presents in detail the medium-development alternative, which is the selected plan for resource use, management, and development (Resource Plan) at the Garrison Dam/Lake Sakakawea project. Detailed information is provided regarding the location, resource characteristics, resource objectives, and development needs for each of the 182 management units (MU's) at the project. Most sections of this chapter cover only one MU, but some sections include several MU's that are located in the same general area and have the same land classification and managing agency.

In accordance with the master planning process described in Chapter 6, the selected Resource Plan represents the best combination of MU boundaries, land classifications, and types and levels of management and development activities that: 1) respond to regional and ecosystem needs, resource capabilities and suitabilities, and expressed public interests and desires; 2) are compatible with national, tribal, state, and regional goals and programs; 3) are consistent with authorized project purposes; and 4) promote the protection, conservation, and enhancement of natural, cultural, and manmade resources, in compliance with the Corps' seven Environmental Operating Principles. The managing agencies provided input to the master planning team for MU's they manage regarding site and resource characteristics and the types and levels of development anticipated to be needed within 20 years after approval of the Master Plan/EA.

Table 7.1 summarizes the Resource Plan. It presents the number of MU's and land acres in each land classification, as well as percentages of project-wide totals. Acres of project lands are approximate and were calculated in ArcView GIS without regard to actual relief, using an elevation of approximately 1838 feet above mean sea level (msl) for Lake Sakakawea and approximately 1850 feet msl for Lake Audubon.

**Table 7.1. Number of Management Units (MU's) and Land Acres in Each Land Classification at the Garrison Dam/Lake Sakakawea Project.**

LAND CLASSIFICATION	NUMBER OF MU's	PERCENT OF MU's	NUMBER OF ACRES	PERCENT OF ACRES
Project Operations	8	4.372	1,998.85	1.651
Recreation	54	29.508	7,410.18	6.121
Environmentally Sensitive	1	0.546	12.83	0.011
Multiple Resource Management: Recreation – Low Density	42	22.951	4,071.08	3.363
Multiple Resource Management: Wildlife Management General	49	26.776	70,360.65	58.122
Multiple Resource Management: Vegetative Management	29	15.847	37,203.10	30.732
Total	183	100.000	121,056.69	100.000

The MU's are described in the following sections in Chapter 7. MU's are generally presented in numerical order, beginning at Garrison Dam and progressing counter-clockwise around the project. Some sections describe a group of MU's that have many features (but not boundaries) in common; in those cases, MU's within the group will not have consecutive numbers because they are not located adjacent to each other.

## **7.1. DAM, POWERHOUSE, NEARBY PROJECT STRUCTURES      MANAGEMENT UNIT (MU): 001**

### **Includes the Following Areas:**

**Garrison Dam Embankment and Powerhouse**

**Spillway East Area**

**West Tailrace Grassland (North Portion)**

**Tailrace West Recreation Area**

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. This MU consists of part or all of four previously designated MUs in the vicinity of Garrison Dam that contain project structures essential to the operation, integrity, and security of Garrison Dam and its associated project structures. The location of this MU is shown on Sheet 1 (of 22 sheets) in Appendix A of this Master Plan. The MU contains approximately 1,317.07 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

The Garrison Dam embankment, with the powerhouse on the west abutment, is located on the Garrison Dam North and Garrison Dam South USGS topographic maps. Garrison Dam is located in Sections 4 and 5, T146N, R84W, in McLean County, North Dakota (ND); Section 6, T146N, R84W, in Mercer County, ND; and Section 31, T147N, R84W, in Mercer County, ND. It is located on the Missouri River at River Mile 1389.86 above the mouth and approximately 11 miles south of the city of Garrison, ND. The Garrison Dam may be reached by ND Highway 200, which runs across the dam crest approximately 2 miles west of Riverdale and 2 miles east of Pick City, ND.

The Spillway East area is located on the Garrison Dam South USGS topographic map in Section 9, the NW $\frac{1}{4}$  of Section 16, and the E $\frac{1}{2}$  of the NE $\frac{1}{4}$  of Section 17, all in T146N, R84W, in McLean County, North Dakota (ND). The Spillway East area is one mile southwest of Riverdale, ND and is located between the Garrison Dam spillway and McLean County Road 16.

The north portion of the West Tailrace Grassland is located on the Garrison Dam North and Garrison Dam South USGS topographic maps, in the N $\frac{1}{2}$  of the SE $\frac{1}{4}$  and the S $\frac{1}{2}$  of the NE $\frac{1}{4}$  of Section 36, T147N, R85W, in Mercer County, North Dakota (ND). This area is located less than 1 mile southeast of Pick City, ND on the south side of ND Highway 200. The main access to this area is the Corps-maintained West Tailrace access road.

The Tailrace West Recreation Area (RA) is located on the west bank of the tailrace below the powerhouse. It is located on the Garrison Dam North USGS topographic map, in the SW  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  of SW  $\frac{1}{4}$  of Section 31, and the NW  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Section 6, T146N, R84W, in Mercer County, North Dakota (ND). This area is located approximately 2  $\frac{1}{2}$  miles southwest of Riverdale, ND. The area contains less than 1 acre of project lands. It is accessed by a 1-mile long asphalt road from ND Highway 200. The entire MU contains approximately 956.24 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of the Garrison Dam embankment area is conveyed by the dimensions of the dam. The top of the embankment is 1875 feet above mean sea level (msl), and the maximum height of the dam embankment is 210 feet. The crest width is 60 feet, and the

maximum base width is 3,400 feet. Soils of the embankment are rolled earth fill, with Fort Union clay shale at the abutments.

The Spillway East area is an area of rolling hills, valleys, and draws. The steepness of the slopes varies from gentle to severe. The southern portion of the area is flat to gently sloped. The soils are from the Havrelon-Banks-Lohler association and are mostly comprised of Zahl-Cabba complex, Wilton-Temvik complex, and Mandan silt loams.

The topography in the northern portion of the West Tailrace Grassland consists mainly of gently to moderately rolling slopes. The dominant soil types include Temvik-Williams silt loams (3 to 6 percent slopes), Wilton silt loam (1 to 3 percent slopes), and Cabba loam (9 to 15 percent slopes). Minor soil types are Cabba-Badland complex (15 to 50 percent slopes), Cherry silty clay loam, gullied (3 to 9 percent slopes), and Cabba loam (15 to 35 percent slopes). All are well drained soils.

The topography in the Tailrace West RA is relatively flat. Soil consists of cut and fill materials.

Vegetation. Combinations of native and non-native short- to mid-grass prairie species grow on the Garrison Dam embankment, through planting or natural seed dispersal. The dam embankment receives limited use by white-tailed deer, furbearers, and songbirds.

In the Spillway East area, riparian vegetation dominates the draws, valleys, and drainage areas. This vegetation gives way to mixed prairie grasses on the hilltops and hillsides. A large valley in the northern part of this area contains a wetland area that is fed by runoff from rains and spring snowmelt. The southern end of the Spillway East area is mostly grassland. There are eight tree plantings: three block plantings and five row plantings. There are two infestations of leafy spurge in the Spillway East area; one is in the southern grasslands, and the other is in the main valley in the center of the area.

In the northern portion of the West Tailrace Grassland, mixed prairie grasses can be found.

Vegetation in the Tailrace West RA consists of warm-season mixed grasses.

Fish and Wildlife. Waterfowl species utilize the shorelines of the Garrison Dam embankment and the tailrace waters near the powerhouse. No threatened or endangered species utilize the dam embankment area as nesting habitat; however, occasional sightings of the American bald eagle have been recorded.

The Spillway East area is used by white-tailed deer, red fox, mink, raccoon, cottontail rabbit, beaver, and several species of rodents. Avian species include turkey, ring-necked pheasant, Hungarian partridge, and several species of songbirds. The area is used by waterfowl as a nesting and brood raising site. Bald eagles, golden eagles, and several species of hawks and owls have been observed in the Spillway East area.

The northern portion of the West Tailrace Grassland is used by white-tailed deer, mule deer, red fox, mink, raccoon, cottontail rabbit, turkey, beaver, ring-necked pheasant, Hungarian partridge, and several species of rodents and songbirds on a year round basis. Bald eagles, golden eagles, and several species of hawks and owls have been observed in the area.

The Tailrace West RA is used by cottontail rabbits, small rodents and songbirds.

**Visitation.** The number of visits recorded by the Corps at the powerhouse and the Tailrace West Recreation Area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Powerhouse Visits</b>	<b>Tailrace West RA Visits</b>
1995	9,022	24,956
1996	7,843	26,957
1997	10,712	32,204
1998	9,023	28,780
1999	8,992	25,652
2000	7,204	31,480
2001	4,933	14,892
2002	3,207	12,343
2003	3,231	12,438
2004	2,974	14,916
2005	2,723	14,905
2006	1,138	15,147

**Recreation.** The Garrison Dam and powerhouse area is restricted from most recreational opportunities except for sightseeing and limited off-shore fishing. Garrison Dam and powerhouse are one of the top tourist attractions in the region. There are 2 parking lots and a restroom with flush toilet at the powerhouse. Two overlooks, one on each abutment, provide interpretive signage for public information on the dam, powerhouse and outlet works.

The Tailrace West Recreation Area is a day use area. Recreational activities at the RA include shoreline fishing and sightseeing. Recreational facilities include a small parking area and a double vault toilet.

The Spillway East area is used as a wildlife viewing, hiking, and photography area. Some off-road vehicle (ORV) use has occurred. No hunting is allowed, and trapping is allowed by Corps permit only.

In the northern portion of the West Tailrace Grassland, recreational uses are mainly big game and upland game hunting, wildlife viewing, and sightseeing. Occasional recreation activities include trapping, photography, and hiking.

**Other Important Past Management Activities.** The Spillway East area was classified as a wildlife management area in the 1978 Master Plan and the 1983 General Plan and was unofficially reclassified as Multiple Resource Management: Vegetative Management in the 1996 Operational Management Plan (OMP). A land classification of Project Operations is needed because this area is adjacent to the spillway and constitutes a buffer area that protects the integrity and security of Garrison Project structures. The Spillway East area will continue to be managed for wildlife management and vegetative management as important collateral uses.

The northern portion of the West Tailrace Grassland had a land classification of Project Operations in the 1978 Master Plan. It was unofficially reclassified as Multiple Resource Management: Vegetative Management in the 1996 OMP because the area was made available for haying purposes once every 3 years. A land classification of Project Operations is needed because the Corps' cold storage facility is located in this area; access to this storage building is controlled by a locked gate.



The Tailrace West RA contains only 1 acre and had a land classification of Recreation-Low Density in the 1978 Master Plan. Because it received high visitation, it was unofficially reclassified as Recreation in the 1996 OMP. A land classification of Project Operations is needed because the recreation area is adjacent to the west bank of the Tailrace and constitutes a buffer area that protects the integrity and security of Garrison Project structures. The Tailrace West area will continue to be managed for intensive recreation use as well as for project operations.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this project operations area include the following, not in priority order:

- Maintain and operate project structures in a manner that allows them to effectively fulfill project purposes;
- Accomplish power generation and flood control purposes of the project;
- Maintain the operational integrity of the dam, spillway, powerhouse, tailrace, and related facilities;
- Provide an adequate area for maintenance and storage facilities that are required to meet overall project objectives;
- Provide an area to store and obtain gravel and rock used in the operation of the Garrison project;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Improve the quality, quantity, safety, and diversity of day use recreational opportunities and facilities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide interpretation of the history and function of project structures found in the area;
- Provide interpretation of the natural and ecological resources found in the area;
- Provide opportunities for visitors to the project to learn of the mission of the Corps of Engineers on the Missouri River and to learn of the process of hydropower generation;
- Provide for nonconsumptive resource uses such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Stabilize the grass cover on the dam embankment for soil stability and aesthetics;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Upgrade and maintain the quality of habitat for a variety of wildlife species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this project operations area include the following, not in priority order:

- Maintain and update interior roads as needed;

- Provide adequate parking areas for shoreline users;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Update visitor safety information using signage, bulletin boards, and innovative programs as appropriate;
- Upgrade interpretive displays and educational materials for visitors;
- Provide appropriate protection for any cultural resources;
- Mow and fertilize embankment vegetation to maintain vegetative cover that promotes soil stability to retain dam integrity;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation, bird watching, hiking, sightseeing, and photography;
- Plant trees, shrubs, and native grasses in non-embankment areas where appropriate to increase shade, winter cover, woody vegetation, and food sources for wildlife;
- Enhance the quality of the Spillway East wetland for resident and migratory species;
- Enhance grassland vigor in the Spillway East area by a rotational system of haying and/or controlled burns;
- Control noxious weeds.

## **7.2. SPILLWAY OVERLOOK**

**MANAGEMENT UNIT (MU): 002**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Spillway Overlook is shown on Sheet 1 (of 22) in Appendix A of this Master Plan. It is located on the Garrison Dam South USGS topographic map, in the NE 1/4 of the SW 1/4 of Section 4, T146N, R84W, in McLean County, North Dakota (ND). This MU is located approximately one half mile west of Riverdale, ND, from which it is accessed by paved road. The MU contains approximately 16.26 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Spillway Overlook consists of relatively level soils. The soil consists of cut and fill materials.

Vegetation. The majority of the vegetation is warm season mixed grasses. Predominant trees in the area include cottonwood, elm, and green ash.

Fish and Wildlife. This area is used by songbirds, cottontail rabbits, and small rodents.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	21,271	2001	20,387
1996	21,290	2002	21,186
1997	114,182	2003	21,850
1998	19,690	2004	23,080
1999	16,946	2005	23,062
2000	25,427	2006	23,472

**Recreation.** The Spillway Overlook is a day use area. Recreational activities include picnicking, shore fishing, and sightseeing. A large group picnic shelter, picnic tables, grills, and a vault toilet are located here.

**Other Important Past Management Activities.** A large wood-frame, octagon shaped building was constructed in the area in 1977 for use as a visitor center. Interpretative exhibits were never developed, so some of the sides were removed to convert it into a group picnic shelter. It was later destroyed.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreation opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Protect the integrity of project structures by continuing to control shoreline erosion;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide educational opportunities about safety requirements, the Corps' mission, purpose of the Missouri River main stem projects, and history of the Garrison project.

**Development Needs.** Development needs for this recreation area include the following, not in priority order:

- Install a picnic shelter;
- Improve day use facilities including additional picnic tables, benches, and grills;
- Add a playground;
- Replace the toilet to meet Americans with Disabilities Act (ADA) standards;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Control shoreline erosion that endangers project structures or recreational areas or facilities;
- Provide appropriate protection for any cultural resources;

- Update interpretive signs as needed;
- Improve vegetative cover to enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Control noxious weeds.

### **7.3. FALKIRK WETLANDS WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 003**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. This MU is shown on Sheet 1 (of 22) in Appendix A of this Master Plan. It is located on the Garrison Dam South and Garrison Dam North USGS topographic maps in the NE¼ of Section 6, T146N, R84W, and the SW¼ of the SE¼ of Section 31, T147N, R84W, in McLean County, North Dakota (ND). This MU covers an area located between the Missouri River Boat Ramp access road and the east bank of the Garrison Dam Tailrace. The main access to the area is from the Missouri River Boat Ramp access road. The MU contains two parcels totaling approximately 397.35 acres of project lands calculated in ArcView Geographic Information System (GIS) without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. This MU is comprised of a flat level area with some minor depressions and several drainage ditches. The soils in the MU are dominated by Ustorthents, which are soils recently formed in disturbed areas that do not have well developed soil horizons.

Vegetation. The MU is comprised of mixed prairie grasses and scattered clumps of shrubs and trees. The low areas in the MU contain some cattails and other wetland sedges and rushes.

Fish and Wildlife. The MU is heavily used by white-tailed deer during the fall and winter months. There are some tall trees on the west edge of the MU which are used as perch sites by wintering bald eagles. Permanent residents of the MU include ring-necked pheasants, Hungarian partridge, red fox, and various species of songbirds and rodents.

Visitation. The Corps does not record visitation for this area.

Recreation. The area is mainly used by shore fishermen as an access point and parking lot for fishing the East Tailrace. Wildlife watching and photography are also popular in this MU. The MU contains two parking lots and a fish cleaning station for recreational users of the Downstream Recreation Area. Camping is not allowed in this area. Hunting is not allowed, and trapping is allowed by Corps permit only.

Other Important Past Management Activities. This MU has been used as a storage area for coal that was excavated during the construction of Garrison Dam. The coal was sold to the Falkirk Mine and was removed by the spring of 1994. A large wetland complex was developed by the Falkirk Mine Company as part of the restoration of the area.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and waterfowl;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### 7.4. MISSOURI RIVER RAMP (TAILWATERS)

MANAGEMENT UNIT (MU): 004

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Tailwaters area is shown on Sheet 1 (of 22) in Appendix A of this Master Plan. It is located on the Garrison Dam South USGS topographic map, in the NE 1/4 of the SE 1/4 and part of the NE 1/4 of Section 6, T146N, R84W, in Mercer County, North Dakota (ND). The MU is located approximately 2.5 miles southwest of Riverdale, ND just south of the Garrison Dam power plant, and access is by paved and gravel road. The MU contains approximately 32.71 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Tailwaters area consists of relatively level slopes. The dominant soil type is Ustorthents silty clay.

Vegetation. Vegetation includes combinations of non-native grasses, native short- to mid-grass prairie species, native shrubs, and trees.

Fish and Wildlife. This area is used by white-tailed deer, cottontail rabbits, red fox, coyote, skunk, raccoon, mink, badger, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant and gray partridge. Various waterfowl, shorebirds, raptors, eagles, and songbirds can be found in this area, depending upon the season.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	35,182	2001	57,232
1996	39,098	2002	35,975
1997	46,265	2003	36,745
1998	43,190	2004	41,424
1999	45,127	2005	38,691
2000	47,042	2006	39,108

Recreation. This recreation area is a day use area and a major access point on the Missouri River. Recreational activities in the area include boat launching, shore fishing, and sightseeing. A vault toilet and a fish cleaning station are located here. The ramp is used at all times of the year. Hunting is not allowed, and trapping is allowed only with a Corps permit.

Other Important Past Management Activities. During the winter, ice builds up on the end of the ramp and is cleaned off by Corps personnel to meet public needs. There is also a siltation problem at the end of the boat ramp, and dredging in this area may be needed approximately every 3 years to keep the ramp open for use.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties

that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing facilities and circulation roads;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Provide river access for fishing, boating, and other water-oriented recreation;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and/or improve wildlife habitat for a variety of species;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Replace the existing kiosk with a recycled plastic kiosk;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Improve existing interior roads and parking lots;
- Improve the entrance road;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Construct a fishing pier meeting Americans with Disabilities Act (ADA) standards;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Control shoreline erosion that endangers recreational areas or facilities;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses to enhance views, shade, and wildlife food supply and habitat.

## **7.5. DOWNSTREAM WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 005**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Downstream Wildlife Area is shown on Sheet 1 (of 22) in Appendix A of this Master Plan. It is located on the Garrison Dam South USGS topographic map in the W½ of Section 5, the NE¼ of Section 7, and the NW¼ of the NW¼ of Section 8, T146N, R84W, in

McLean County, North Dakota (ND). This MU covers an area between the Missouri River Boat Ramp access road and the Garrison Dam National Fish Hatchery. Access to this area may be obtained from the Missouri River Boat Ramp road or the Downstream Recreation Area road. This MU contains approximately 302.29 acres calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The MU is mostly flat bottomland with some gentle sandy ridges. The soils in this MU are from the Havrelon-Banks-Lohler association and are mostly comprised of Banks loamy fine sand and Dimmick silty clay. There are also some cut and fill areas from the drainage channels, as the Garrison Dam National Fish Hatchery water outlet and the Garrison Dam relief channel (which carries any water seeping through the dam) both traverse the MU.

Vegetation. The southern half of the MU is primarily covered with stands of cottonwoods and willows. The northern half is mixed prairie grasses with some scattered clumps of trees and shrubs. The drainage systems contain stands of cattails and rushes.

Fish and Wildlife. The MU is used year round by white-tailed deer as a resting, feeding, and fawning area. Permanent residents of the area are red fox, mink, raccoon, cottontail rabbit, turkey, beaver, ring-necked pheasant, Hungarian partridge, and many species of rodents and songbirds. The area is used by waterfowl and shorebirds as a nesting and brood raising site. Bald eagles use the trees in the MU as perching sites in the winter. The two drainage channels are utilized by carp, buffalo carp, suckers, northern pike, rainbow trout, and minnows.

Visitation. The Corps does not record visitation for this area.

Recreation. The MU is used as a wildlife viewing and photography area. Other uses include hiking and shore fishing. No hunting is allowed, and trapping is allowed by Corps permit only.

Other Important Past Management Activities. This MU formerly contained a portion of the old Missouri River Channel. This channel was eliminated during the construction of the Garrison Dam.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;



- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.6. DOWNSTREAM RECREATION AREA**

**MANAGEMENT UNIT (MU): 006**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Downstream Recreation Area is shown on Sheet 1 (of 22) in Appendix A of this Master Plan. It is located on the Garrison Dam South USGS topographic map, in the E ½ of Section 7 and the NW ¼ of Section 18, T146N, R84W, in McLean County, North Dakota (ND). The MU is located approximately 3 miles southwest of Riverdale, ND just south of the maintenance facility and is accessed by paved road. The MU contains approximately 153.85 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

**Topography and Soils.** The topography in the Downstream Recreation Area consists of relatively level slopes. The dominant soil types in this area are Trembles fine sandy loam (0 to 1 percent slopes) and Havrelon very fine sandy loam (0 to 1 percent slopes).

**Vegetation.** Vegetation in this MU includes combinations of non-native grasses, native short- to mid-grass prairie species, and native shrubs. Predominant trees in this area include cottonwood, green ash, boxelder, elm, and Russian olive.

**Fish and Wildlife.** This area is used by white-tailed deer, cottontail rabbits, red fox, coyote, skunk, raccoon, mink, badger, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant and gray partridge. Various waterfowl, shorebirds, raptors, eagles, and songbirds can be found in this area, depending upon the season.

**Visitation.** The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	49,732	2001	74,320
1996	53,128	2002	86,524
1997	62,352	2003	50,120
1998	63,558	2004	39,965
1999	59,243	2005	46,299
2000	60,657	2006	44,797

**Recreation.** The Downstream Recreation Area is a campground. Recreational activities in the area include camping, sightseeing, hiking, and shore fishing. Bow hunting is allowed after the campground is closed for the season. The campground here is the only major one located near the river in this region and has expanded over the years to meet visitor demand. Flush toilet and shower facilities have been installed. Of the 117 campsites in this MU, 100 have electrical hookups (92 30-amp and 8 50-amp). A dump station, playground, volleyball court, amphitheater, and a hiking and interpretive trail are also located in this area.

**Other Important Past Management Activities.** Loops 1 and 2, with comfort stations, were constructed in 1966 and 1969. Loop 3, developed in 1983, included a toilet building relocated from Tobacco Garden, and a shower building was added in 1984. Loop 4 was developed as a primitive camping area in 1982.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide facilities for family and group camping activities;
- Provide access for hunting on project lands;
- Promote non-consumptive uses of resources such as hiking, photography, bird watching, wildlife observation, and sightseeing;
- Provide access to nearby facilities for boat fishing, boating, and other water-based recreation;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species;
- Provide interpretation of natural resources in the area;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide opportunities to explain and/or interpret the Native American history/ traditions of this region;
- Provide educational opportunities about safety requirements, the Corps' mission, purpose of the Missouri River main stem projects, and history of the Garrison project.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade the campground with modern amenities;
- Provide vegetative cover that enhances activities such as wildlife observation and interpretation, bird watching, hiking, hunting, sightseeing, and photography;
- Improve opportunities for interpretation of natural and cultural resources;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Replace amphitheater seating;
- Replace information centers on comfort stations;
- Upgrade the electrical system in loops 1, 2, and 3;
- Rehabilitate/upgrade the comfort stations in loops 1 and 2;
- Construct overflow parking area(s) (maximum of 20,000 square feet);
- Construct a new comfort station in Loop 3;
- Redo the camping pads in loops 1 and 2;
- Add living spaces to campsites (maximum of 28,000 square feet);
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreational areas or facilities;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant additional trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## 7.7. GARRISON DAM NATIONAL FISH HATCHERY

**MGT. UNIT (MU): 007**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Fish and Wildlife Service (USFWS)

Location. The Garrison Dam National Fish Hatchery (NFH) is shown on Sheet 1 (of 22) in Appendix A. It is located on the Garrison Dam South USGS topographic map in Sections 5, 6, and 8, T146N, R84W, in McLean County, North Dakota (ND). The MU is located 1 mile west of Riverdale, ND and below the Garrison Dam. The MU may be accessed by the Downstream Campground Road. The MU contains approximately 224.78 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of this MU is flat because it is located on what was one of the borrow areas for Garrison Dam. Most of the MU contains cut and fill soils associated with the construction of Garrison Dam. On the south edge are soils from the Havrelon-Banks-Lohler association. These soils are primarily Havrelon very fine sandy loams.

Vegetation. Most of the land in the MU is occupied by fish rearing ponds, buildings, and parking lots associated with the hatchery. The southern edge of the MU is dominated by cottonwood flood plain forest, which gives way along the western edge to grasslands.

Fish and Wildlife. The MU is used by white-tailed deer, red fox, raccoon, cottontail rabbit, ring-necked pheasant, Hungarian partridge, and several species of rodents and songbirds. The area is used by waterfowl as a nesting and brood raising site. Several goose tubs and wood duck boxes have been located on or near the rearing ponds. Bald eagles, golden eagles, and several species of hawks and owls have been observed in and around the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Most of the hatchery's lands are open to the public. Hunting is not allowed on this MU. Hiking trails connect the hatchery to the Downstream Campground and offer opportunities for wildlife viewing which includes a Chinook salmon spawning run. The hatchery's buildings are available for tours year-around.

Other Important Past Management Activities. Garrison Dam NFH plays a pivotal role in maintaining fisheries in the Upper Missouri River Basin. Construction of the Garrison Dam NFH was authorized by Congress in 1957 under the Amended Coordination Act (71 Stat. 264) to provide mitigation for the Upper Missouri River Development Plan (the series of dams on the Missouri River constructed by the Corps). A cooperative agreement was drafted with the Corps in 1961 for use of the land, installation of the water supply line, and electrical power at reduced rates. The original cooperative agreement has been updated on three occasions. Construction of the hatchery began in 1961 and was completed in 1963. In cooperation with the NDGFD the hatchery was expanded in the 1980s to meet the ever growing fishery needs. Through a cooperative agreement, funding was provided to the hatchery for a \$2 million state-of-the-art salmon and trout production facility in 1988 and a \$2.5 million pond expansion completed in 1989. The USFWS operates the expanded facilities with financial and in-kind assistance from the NDGFD. In 1994, 14 acres that were previously in the extreme southeast corner of the MU were returned to the Corps to become an equestrian area for the Spillway Pond Recreation Area.

Fish production at the hatchery can exceed 15 million fingerling and catchable fish per year. The principal fish species raised at the hatchery are walleye, northern pike, pallid sturgeon, rainbow trout and Chinook salmon. Other species produced at the hatchery include bluegill, perch, smallmouth bass, crappie, brown trout, lake trout, cutthroat trout, burbot, and paddlefish. More information concerning Garrison National Fish Hatchery can be obtained at the hatchery's Web site: <http://www.fws.gov/garrisondam> or by telephoning (701) 654-7451.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Produce fish for the Missouri River waters impacted by the construction of the dams as mandated in the Fish and Wildlife Coordination Act;
- Maintain a healthy recreational fishery for the benefit of the angling public and for general economic productivity in accordance with the National Recreational Fisheries Policy;
- Maintain propagation programs that focus on salmon, trout, walleye, northern pike, perch and paddlefish;
- Assist in the recovery of the pallid sturgeon;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Maintain wood duck boxes for waterfowl nesting and brood raising;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide educational opportunities through tours at the Visitor Center;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods.

#### **7.8. LOWER REGION EAST WILDLIFE MANAGEMENT AREAS (WMA'S):**

<b>RIVERDALE WMA</b>	<b>MANAGEMENT UNIT (MU): 008</b>
<b>WOLF CREEK WMA</b>	<b>MANAGEMENT UNIT (MU): 018</b>
<b>AUDUBON WMA</b>	<b>MANAGEMENT UNIT (MU): 025</b>
<b>DETROBRIAND WMA</b>	<b>MANAGEMENT UNIT (MU): 031</b>
<b>DOUGLAS CREEK WMA</b>	<b>MANAGEMENT UNIT (MU): 050</b>

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. North Dakota Game and Fish Department (NDGFD)

Location. All of these WMA's are located in McLean County, North Dakota (ND). They are shown on Sheets 1-6 (of 22) in Appendix A. The Riverdale WMA (formerly Downstream WMA) is located below Garrison Dam and east and southeast of the Garrison Dam spillway. The

Wolf Creek WMA, located 2 miles west of Coleharbor, ND, includes most of the project lands between Pochant Bay and the southwest corner of the Snake Creek embankment, including all of Mallard Island. The Audubon WMA occupies the north and west half of Lake Audubon. The DeTrobriand WMA includes almost all the project lands located between the Snake Creek Pumping Station and Fort Stevenson State Park. The Douglas Creek WMA covers most of the north and west shores of Douglas Creek Bay and then extends westward along Lake Sakakawea to the middle of Berthold Bay. Vehicular access to the WMA's is usually by short gravel or paved roads leading from a major highway. Boat access to the WMA's is also provided by ramps at nearby recreation areas. The table below provides the number of acres in the lease for each WMA and how the acres were determined. Also provided is the land acreage in each WMA that was calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl) for Lake Sakakawea and 1850 feet msl for Lake Audubon. As provided in the General Plan, the NDGFD requested and was granted management of a number of Wildlife Areas (WA's) previously managed by the U.S. Army Corps of Engineers (Corps); these are also shown in the table.

<b>Wildlife Management Area (WMA)</b>	<b>Leased Acres and Basis of Lease Boundary</b>	<b>Approx. Acres Calculated in GIS (and Basis)</b>	<b>WMA Includes the Following Previously Corps-Managed Wildlife Areas (WA's)</b>
Riverdale	2,993.4 acres (tract boundary lines)	2,942.77 acres (tract boundary lines)	Downstream WA (south part); Roughrider WA; Downstream Grasslands WA
Wolf Creek	4,974.2 acres	4,860.23 acres (>1838 ft msl)	Wolf Creek WA
Audubon	10,750.7 acres (4,034.15 land/is.; 6,716.55 water)	3,844.94 acres (>1850' msl incl land & islands)	None
DeTrobriand	2,644.5 acres (above and below 1850 ft.)	2,326.47 acres (>1838 ft msl)	West Totten WA
Douglas Creek	2,542.1 acres	2,372.83 acres (>1838 ft msl)	None

**Topography and Soils.** The topography of these WMA's contains both hills and mostly flat lowlands. Soils in the lowlands are deep, nearly level, well to excessively drained, and finely to coarsely textured. The upland topography varies from rolling hills and ridges to uplands divided by moderately to steeply sloped drainage valleys and coulees. Soils on uplands (including terraces and glacial till) are deep, nearly level to rolling, well drained, and medium to moderately fine textured. Erosion from Lake Sakakawea has caused some moderately high cliffs to form along the shoreline in some parts of the WMA's, and the shoreline in Audubon WMA is especially susceptible to erosion.

**Vegetation.** Grasslands include native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Common grasses in the WMA's include smooth brome, tall wheatgrass, and western wheatgrass; however, the soil types will support, needle and thread, green needlegrass, prairie junegrass, blue grama, Kentucky bluegrass, Penn sedge, and little bluestem. At Douglas Creek WMA, seasonal grazing by lessees helps maintain grassland vitality. At Riverdale WMA, cottonwood trees are common in the Missouri River floodplain forest, where green ash, box elder, and bur oak are also present. The drainage coulees contain green ash, box elder, cottonwood, and a variety of woody shrubs. Riverdale, Wolf Creek, Audubon, and

Douglas Creek WMA's contain extensive row and block plantings of conifers, deciduous trees, and shrubs that provide food, roosting areas, travel lanes, and escape cover for wildlife. Audubon WMA has many ponds surrounded by wetlands vegetation, and marshy wetland areas are found in all the WMA's. Wetlands at the WMA's may contain cattails, phragmites, giant reed, rushes, and duckweed. Noxious weeds found at the WMA's include Canada thistle and leafy spurge.

Fish and Wildlife. Permanent mammalian residents of these WMA's include white-tailed deer, coyote, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, mink, muskrat, and many species of rodents. Mule deer and sometimes pronghorn antelope are found in these WMA's. Avian species include turkey, ring-necked pheasant, Hungarian partridge, sharp-tailed grouse, mourning doves, waterfowl, shorebirds, raptors, and songbirds. Grouse drumming grounds are found in these areas. In these WMA's, aquatic areas are used by waterfowl and shorebirds for nesting and brood raising. Hawks, owls, and vultures are also found in these WMA's. Bald and golden eagles use the trees near the water for winter roosting, and golden eagles, bald eagles, and least terns have been observed along the shorelines. Piping plovers have nested along the lakeshore and on islands in the WMA's. Waterfowl nesting structures have been installed at the WMA's. Spawning habitats at the WMA's include vegetative cover used by Northern pike and panfish, and gravel bottoms used by walleye. Bays adjacent to these WMA's are popular walleye fishing areas.

Visitation. The Corps does not record visitation for these wildlife management areas.

Recreation. Hunting for big game, upland birds, and/or waterfowl is the primary recreational use. Riverdale WMA contains a minimum maintenance, 200-yard shooting range. Other activities include shore fishing, hiking, photography, and nature study. During the winter, ice fishing is very popular on the frozen waters of Lake Audubon. Horseback riding is allowed by permit in Riverdale WMA during non-hunting season and is allowed in all other WMA's unless otherwise posted. Audubon WMA has three duck boat access sites. Waterfowl hunters and boat fishermen use boat ramps at the Wolf Creek, Audubon, DeTrobriand, and Douglas Creek WMA's and at recreation areas near the WMA's. Two intensive use areas near the DeTrobriand WMA ramps (the Steinke Bay Lake Access Area, in the Corps-managed area below 1850 feet msl) have vault toilet facilities and are popular for camping. There is a "grandfathered" shoreline use permit for a boat dock in DeTrobriand WMA.

Other Important Past Management Activities. The Roughrider WA was previously used as an off-road vehicle area. The Downstream Grasslands area was originally excluded from the WMA due to its proximity to the Riverdale landfill and Riverdale sewage lagoons; in addition, it contained a railroad bed that was used during dam construction. The West Totten WA was previously included in the West Totten Trail Recreation Area. Under an agreement with the Corps and NDGFD, McLean County excavated gravel above 1850 feet msl in the DeTrobriand WMA near Steinke Bay when the water table was low in the early 2000's; stockpiled the gravel for use on roads that provide access to the lake; reshaped and reclaimed the gravel pit area; and agreed to remove the stockpiled gravel within 5 years of the initial excavation.

Cultural Resources. Prior to any future development at or near these wildlife management areas, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for these wildlife management areas include the following, not in priority order:

- Manage wildlife and fishery resources to support propagation of the species;
- Encourage hunting, fishing, and related outdoor recreation opportunities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation and interpretation, and sightseeing;
- Permit other compatible recreation activities;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties, in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Protect, conserve, and/or improve habitat for a variety of wildlife species, including threatened and endangered species;
- Reduce disturbance to wildlife, reduce destruction of habitat, and improve quality of hunting and wildlife observation by controlling vehicle use;
- Maintain and improve the quality and diversity of vegetative resources to provide food and cover for a variety of wildlife species;
- Promote ecological diversity by increasing wetland habitat quantity and quality for a variety of fish and wildlife species, including resident and migratory waterfowl;
- Promote water quality and reduce erosion by stabilizing the shoreline if needed;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for these wildlife management areas include the following (not in priority order), many of which are detailed in the management plan, grassland management plan, and/or cropland management plan for each WMA:

- Increase no-vehicle areas through signage and/or fencing to reduce disturbance to wildlife, reduce destruction of habitat, and improve hunting quality and wildlife observation opportunities;
- Construct or improve trails as needed to improve access and control vehicle traffic;
- Provide for spring pike fishing access to the lake where compatible with upland habitat management;
- Maintain/improve facilities to manage water levels at Lake Audubon and marsh areas, in accordance with each WMA's management plan;
- Develop additional wetland acres in accordance with each WMA's management plan;
- Increase grassland quality by periodic burning, grazing, and/or haying, based on best available methods in accordance with each WMA's grassland management plan;
- Improve wildlife habitat by limiting crop acreage, replacing crops with herbaceous cover, planting a variety of crops, and decreasing field size to increase edge effects;
- Establish vegetative cover buffers to reduce pesticide runoff and erosion potential;
- Provide grasslands with tall residual cover for upland game bird and waterfowl nesting, and to maximize fall hunting opportunities;
- Plant trees, food plots, and native/marsh grasses for wildlife habitat and food supply;
- Provide appropriate protection for any cultural resources;
- Protect nesting islands from shoreline erosion at Audubon WMA;
- Plant permanent vegetation on upland and shoreline areas of high erosion potential;
- Plant woody and herbaceous cover to develop safe wildlife travel lanes along property boundaries, fences, field edges, and between different habitat components;
- Control noxious weeds;
- Install boundary fencing as needed.



## 7.9. SPILLWAY POND RECREATION AREA

MANAGEMENT UNIT (MU): 009

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Spillway Pond Recreation Area is shown on Sheet 1 (of 22) in Appendix A. It is located on the Garrison Dam South USGS topographic map, in the W ½ of the SE 1/4 of Section 8, T146N, R84W, in McLean County, North Dakota (ND). The MU is located approximately one mile southwest of Riverdale, ND and is accessed by a paved and gravel road. The MU contains approximately 21.01 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Spillway Pond Recreation Area consists of relatively level slopes. The soil consists of cut-and-fill materials. There is good topsoil in the area, and drainage is good.

Vegetation. The majority of the MU is river bottomland forest with cottonwoods and green ash dominating. The developed recreation area contains warm-season mixed grasses and shrubs.

Fish and Wildlife. This area is used by white-tailed deer, cottontail rabbits, red fox, coyote, skunk, raccoon, mink, badger, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in this area, depending upon the season.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	12,473	2001	6,910
1996	10,742	2002	14,031
1997	9,976	2003	13,026
1998	11,041	2004	11,426
1999	15,377	2005	13,283
2000	7,849	2006	6,951

Recreation. The Spillway Pond Recreation Area is a major day use area in the Riverdale area. Recreational activities in the area include picnicking, swimming, sunbathing, boating, fishing, playing volleyball or basketball, pitching horseshoes, and playing on the playground equipment. In the past, the Spillway Pond Recreation Area contained minimal facilities, mainly a group picnic shelter and a boat ramp allowing access to the Spillway Pond. In 1992 and 1993, a swimming beach, parking lot, and volleyball and basketball courts were developed at the Spillway Pond. This MU has a flush toilet, a vault toilet, three group picnic shelters, and 20 other picnic sites. A fishing pier that meets Americans with Disability Act (ADA) standards is also located here.

Other Important Past Management Activities. Several facilities were relocated to the Spillway Pond Recreation Area from the Intake Structure Picnic Area.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing facilities and circulation roads;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

**Development Needs.** Development needs for this recreation area include the following, not in priority order:

- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Upgrade the comfort station to meet Americans with Disabilities Act (ADA) standards;
- Replace the existing kiosk with a recycled plastic kiosk;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Upgrade access and interior roads;
- Replace the existing vault toilet;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Control shoreline erosion that endangers recreational areas or facilities;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses to enhance views, shade, and wildlife food supply and habitat.

#### **7.10. DOWNSTREAM QUARRY WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 010**

**Land Classification.** Multiple Resource Management: Wildlife Management General

**Managing Agency.** U.S. Army Corps of Engineers (Corps)

**Location.** The Downstream Quarry is shown on Sheet 1 (of 22) in Appendix A. It is located on the Garrison Dam South USGS topographic map in the E½ of the SE¼ of Section 29, T146N

R84W, in McLean County, North Dakota (ND). This MU is located on the west side of McLean County Road 16, 4 miles south of Riverdale, ND. The MU contains approximately 41.59 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of this MU is flat and level except for the northern quarter-section, which is an excavated gravel pit. The soils in the gravel pit are mainly rocks, gravel, and sand. The soils in the remaining part of the MU are Mandan silt loam.

Vegetation. The gravel pit area is sparsely covered by mixed prairie grasses and a few trees. The rest of the MU has been planted to rows of trees.

Fish and Wildlife. The MU is used by coyote, red fox, mink, raccoon, cottontail rabbit, turkey, beaver, ring-necked pheasant, Hungarian partridge, and many species of rodents and songbirds. The area is used by white-tailed deer as a travel lane and a bedding area. Several species of hawks have been observed utilizing the MU.

Visitation. The Corps does not record visitation at this area.

Recreation. Upland game bird hunting is the major recreational use of this area. Occasional use includes wildlife viewing and photography. There are indications that the gravel pits have been used by off-road vehicles.

Other Important Past Management Activities. This MU was purchased as a gravel reserve for dam operations. Until 1992 the non-excavated portion of the MU was leased for agriculture. Trees were planted in the 1980s for windbreaks and in 1992 and 1993 to improve wildlife habitat.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;

- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Maintain/manage any wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access for non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.11. RIVERDALE SOUTH VEGETATIVE MANAGEMENT UNIT (MU)**

**MU: 011**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Riverdale South Vegetative MU is shown on Sheet 1 (of 22) in Appendix A. It is located on the Garrison Dam South USGS topographic map, in the E½ of Section 4, T146N, R84W, in McLean County, North Dakota (ND). The city of Riverdale, ND is located adjacent to the eastern boundary of the MU. The MU contains approximately 86.27 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by paved road from the city of Riverdale, ND.

Topography and Soils. This MU is a relatively flat upland that sits on a cliff 70 feet above Lake Sakakawea. A small valley drains the south end of the MU. The soils in this MU are from the Wilton-Williams-Mandan association and are mostly comprised of Zahl-Cabba complex, Wilton-

Temvik silt loams, and Wilton-Williams silt loams. The MU has a severe erosion problem along its boundary with the lake. Over 5 acres have eroded away, leaving cliffs 70 feet high in some places.

Vegetation. Grasslands dominate the MU and comprise over 80 percent of the total acreage. There are 5 acres of native trees consisting mostly of cottonwoods. There are two block plantings of trees totaling 4 acres. These plantings contain boxelder, green ash, and Nanking cherry. Noxious weed infestations of leafy spurge and Canada thistle have occurred in the MU.

Fish and Wildlife. The MU is used by white-tailed deer, raccoons, some upland game birds, and several species of rodents and songbirds. Raptors using the MU include hawks, owls, and vultures; occasionally a bald eagle will be observed in the MU.

Visitation. The Corps does not record visitation for this area.

Recreation. The MU is used as a wildlife viewing, hiking, and photography area. Some ORV use has occurred in the past. No hunting is allowed, but trapping is allowed without a Corps permit.

Other Important Past Management Activities. The southern part of the MU serves as a storage area for emergency piles of rock to be used as riprap in dam emergencies. Several dam safety instruments are located in the MU. In 1992, a controlled burn was conducted to invigorate the grasses in the Riverdale South Vegetative Management Unit. The area is offered for a hay disposal contract in alternate years.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Improve the habitat for wildlife by continuing to not lease the area for grazing or agricultural use;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.12 RIVERDALE OVERLOOK**

**MANAGEMENT UNIT (MU): 012**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Riverdale Overlook is shown on Sheet 1 (of 22) in Appendix A. It is located on the Garrison Dam South USGS topographic map, in the SW ½ of the NE ¼ of Section 4, T146N, R84W, in McLean County, North Dakota (ND). This MU is located approximately one quarter mile west of Riverdale, ND. The MU contains approximately 28.56 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a two-lane paved road.

Topography and Soils. The topography in the Riverdale Overlook consists of relatively level slopes. The dominant soil type is Wilton-Temvik silt loam (3 to 6 percent slopes).

Vegetation. The majority of the vegetation is warm-season mixed grasses. Predominant trees in the area include cottonwood, elm, and green ash.

Fish and Wildlife. This area is used by white-tailed deer, cottontail rabbits, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant and gray partridge. Various songbirds can be found in this MU.

**Visitation.** The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	11,213	2001	5,764
1996	9,126	2002	5,471
1997	10,325	2003	5,610
1998	8,667	2004	5,125
1999	5,550	2005	5,241
2000	8,485	2006	5,794

**Recreation.** The Riverdale Overlook is a day use area. Recreational activities in this area include picnicking, walking, bicycling, and sightseeing. A group picnic shelter, picnic tables, and fire rings are located here.

**Other Important Past Management Activities.** Most facilities previously located in this area were relocated to other recreation areas to improve the balance between facility supply and visitor demand.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing facilities and circulation roads;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

**Development Needs.** Development needs for this recreation area include the following, not in priority order:

- Provide wildlife habitat improvements that also enhance activities such as wildlife observation, bird watching, hiking, sightseeing, and photography;
- Improve roads;
- Control shoreline erosion that endangers recreational areas or facilities;
- Provide appropriate protection for any cultural resources;

- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.13. RIVERDALE WEST WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 013**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Riverdale West Wildlife Area (WA) is shown on Sheets 1 and 2 (of 22) in Appendix A. It is located on the Riverdale North, Garrison Dam North, and Garrison Dam South USGS topographic maps in Section 34, T147N, R84W, and Sections 3 and 4, T146N R84W, in McLean County, North Dakota (ND). The MU is bordered on the east by the entrance road to Government Bay and Missouri Drive, and covers an area starting at the southern entrance to Government Bay and follows south to the Riverdale Overlook Recreation Area. The MU is located just northwest of Riverdale, ND, from which it is accessed by a paved road. The MU contains approximately 144.54 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently sloping uplands that are composed of Mandan silt loams (1 to 3 percent slopes), and riparian valleys, draws, and cliffs which are composed of Cabba-Shale outcrop complexes (25 to 60 percent slopes), and Zahl-Cabba complex (15 to 35 percent slopes). The steep cliffs near the beach are eroding.

Vegetation. The upland portions of the MU are covered with native and introduced annual grasses; there are also several shelter belt plantings of deciduous and coniferous trees. The riparian areas consist mainly of deciduous woody plants and brush. Some steep slopes have no vegetation and are dominated at the cliff base by Russian thistle. Plantings of trees and annual grasses have occurred at this MU, and the open grass fields are opened for haying disposal contracts on a bi-annual basis.

Fish and Wildlife. The MU is frequently used by upland game species such as pheasant, grouse, partridge, and rabbits on a year-round basis. Songbirds use the area throughout the year for brood-rearing and over-wintering. White-tailed deer and several species of squirrels use the woody draws as a winter shelter and summer habitat. The MU is frequented by small rodents, and an occasional furbearer or avian raptor is also seen hunting in the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The MU is used occasionally for shoreline fishing. The extreme northern part of the MU has a small sandy beach that is used for swimming. The steep cliffs near the beach are frequented by visitors, and their eroding condition presents a possible safety hazard. The MU is also used for wildlife viewing and photography. Hunting is not allowed, but trapping is allowed without a Corps permit.

Other Important Past Management Activities. Signage and fencing have been installed to control off-road vehicle (ORV) use that previously occurred in the northern part of the MU.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that



may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;

- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.14. CORPS ADMINISTRATION AREA**

#### **MANAGEMENT UNIT (MU): 014**

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Corps Administration Area is shown on Sheets 1 and 2 (of 22) in Appendix A. It is located in Section 3, T146N, R84W, in McLean County, North Dakota (ND). It occupies Lot 1, Block 10, of the original town site of the City of Riverdale. The Administration Area may be reached by traveling west from U.S. Highway 83 approximately 10 miles on ND Highway 200. The MU contains approximately 7.22 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of this area is relatively level because of grading that occurred prior to construction of the buildings. Soils consist entirely of Mandan silt loams (1 to 3 percent slopes), a nearly level soil found on less mantled uplands and terraces. The soil is well drained but has slow runoff. It is slightly susceptible to erosion.

Vegetation. Tree species in the MU include spruce, crabapple, Siberian elm, bur oak, and green ash. Shrubs include alpine current, purple sand cherry, golden sebum, and abbotswood potentilla. The lawn of the Corps Administration Building is primarily Kentucky bluegrass.

Fish and Wildlife. Because this MU is within the city limits of Riverdale, ND, songbirds are the primary wildlife inhabitants to the area. Occasionally fox squirrels will nest in the larger trees and white-tailed deer will feed near Administration Building bird feeders during the harsh winters. No threatened or endangered species utilize this MU.

Visitation. The Corps does not record visitation at this project operations area.

Recreation. The MU offers limited recreational opportunities. The major attraction is the Administration Building itself, where most visitors come to conduct business. For the general public seeking information about the Garrison Dam/Lake Sakakawea Project and its natural resources, the Administration Building contains an information and interpretive center. This center is, however, only maintained during normal working hours and remains closed on the weekends. The MU also contains a parking lot.

Other Important Past Management Activities. Two buildings located off the ends of the main administration building were torn down shortly after project construction was completed. A storage building and a maintenance shop in this MU were relocated to the Garrison National Fish Hatchery. A below-ground sprinkler system was installed on the grounds in 1991.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this project operations area include the following, not in priority order:

- Administer operation and maintenance of project structures in a manner that allows them to effectively fulfill project purposes;
- Provide an adequate area for administrative, maintenance, and storage facilities that are required to meet overall project objectives;
- Provide customer service in a courteous and efficient manner;
- Provide opportunities for visitors to learn of the mission of the Corps of Engineers on the Missouri River and the purposes of the Garrison Dam/Lake Sakakawea project;
- Provide interpretation of the natural and unique ecological resources found in the area;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Provide for non-consumptive resource uses such as hiking, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Upgrade and maintain the quality of habitat for a variety of wildlife species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this project operations area include the following, not in priority order:

- Create and maintain a pleasant and informative information center;
- Upgrade interpretive displays at the Administration Building;
- Provide for access within the Administration Building that meets Americans with Disabilities Act (ADA) requirements;
- Provide appropriate protection for any cultural resources;
- Plant trees and shrubs to increase winter cover, woody vegetation, and food sources for wildlife;
- Control noxious weeds.

## **7.15. GOVERNMENT BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 015**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Government Bay Recreation Area (RA) is shown on Sheets 1, 2, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the SW 1/4 of the NE 1/4 of Section 34, T147N, R84W, in McLean County, North Dakota (ND). The MU is located approximately one half mile north of Riverdale, ND, from which it is accessed by paved road. The Government Bay RA contains approximately 72.94 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Government Bay RA ranges from flat, level areas to steep hillsides and draws. The most dominant soil types in the area are Zahl-Cabba complex (15 to 35 percent slopes) and Cabba-Shale outcrop complex (25 to 60 percent slopes).

Vegetation. Vegetation in the area includes mid- and short-grass prairie species on the slopes and lower elevations. There are several woody draws that extend down the hillside toward the lake with cottonwood, green ash, and Russian olive dominating. Vegetation on the hills is primarily crested wheat grass.

Fish and Wildlife. The area is used by white-tailed deer, cottontail rabbits, red fox, coyote, skunk, raccoon, mink, badger, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in this MU, depending upon the season. Salmon frequent Government Bay during the fall, when they are spawning.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	24,018	2001	29,590
1996	21,069	2002	26,600
1997	33,856	2003	27,713
1998	34,782	2004	28,326
1999	29,348	2005	24,655
2000	27,961	2006	24,079

Recreation. The Government Bay RA is a day use area. Recreational activities in the area include boat launching and shore fishing. It is a major boat ramp access point in the Riverdale area. The boat ramp was constructed in 1976 and has been extended and lengthened several times over the years. Two single vault toilets were moved to the area in 1977 and 1986. A fish cleaning station was constructed in 1987.

Other Important Past Management Activities. A swimming beach with a stairway access was constructed in 1986. The stairway was removed and the beach was closed in the fall of 1993 due to safety hazards in the area. Cliff jumping has been a problem in this area and the sand caves create a safety hazard. The point protecting the boat ramp is eroding. Placing riprap at that area was suggested to save the point as well as to alleviate the hazards of the sand caves and the cliff jumping. In 1995 the western tip of the peninsula on the north side of Government Bay was removed from the Riverdale Golf Course and added to this MU.

A 35-acre portion of this MU was leased in the 1990's, as the Government Bay Marina, to the city of Riverdale for development of marina and camping facilities. The development plan is included in Government Bay Marina and Campground, approved in February 1994 as Supplement 8 to the 1978 Master Plan. No facilities were developed, and the city no longer leases the area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Provide wildlife habitat improvements that also enhance activities such as wildlife observation, bird watching, hiking, sightseeing, and photography;
- Replace the wood kiosk with a recycled plastic kiosk;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Pave the existing parking lots (109,000 square feet);
- Complete Bank Stabilization/Riprap Protection Project (1000 linear feet of shoreline);
- Add access to the shoreline that meets Americans with Disabilities Act (ADA) standards;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.16. RIVERDALE GOLF COURSE**

## **MANAGEMENT UNIT (MU): 016**

Land Classification. Recreation

Managing Agency. City of Riverdale

Location. The Riverdale Golf Course is shown on Sheets 1, 2, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the SE 1/4 of Section 27 and the NE 1/2 of Section 34 of T147N, R84W, in McLean County, North Dakota (ND). The MU is located adjacent to the Government Bay Recreation Area, approximately one mile northeast of Riverdale, ND, from which it is accessed by a paved road. The MU contains approximately 79.93 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Riverdale Golf Course ranges from flat, level areas to steep hillsides and draws. The most dominant soil types in the area are Mandan silt loams (1 to 3 percent slopes) and Linton-Mandan silt loams (3 to 6 percent slopes).

Vegetation. Vegetation in the area includes short- and mid-grass prairie species on the slopes and lower elevations, and scrub-shrub cedar, willow, and cottonwood in the draws. Vegetation on the hills is primarily crested wheat grass.

Fish and Wildlife. This MU is used by white-tailed deer, jackrabbit, red fox, coyote, skunk, raccoon, mink, badger, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant, and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in this area, depending upon the season.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation at this MU.

Recreation. The major recreational activity that occurs in this MU is golfing. Some big game and upland game hunting also take place at this MU.

Other Important Past Management Activities. This area was originally developed and managed by the Garrison Project Welfare Council (Corps of Engineers) until July 1986. A public park and recreation lease was issued to the city of Riverdale in 1987 to manage the area for recreational golfing. The city of Riverdale has a third-party agreement with the Riverdale Golf Club to use and operate the golf course. In 1995, the western tip of the leased area was returned to the Corps for management because erosion problems made this area unusable for the golf course.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Provide high-quality golfing opportunities consistent with visitor safety;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide opportunities for hunting that are consistent with the safety of all visitors;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Promote visitor safety, soil conservation, and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Relocate/improve the #8 tee box;
- Improve the other tee boxes;

- Add a shelter;
- Add onto/rebuild the cart barn;
- Replace/add trees to the fairways;
- Improve the boundary fence along the bluffs;
- Provide vegetative cover that enhances activities such as wildlife observation and interpretation, bird watching, hiking, hunting, sightseeing, and photography;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Control shoreline erosion that endangers recreational areas and facilities;
- Provide for visitor safety in areas subject to bank erosion by installing signage and fencing;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.17. POCHANT WILDLIFE AREA**

### **MANAGEMENT UNIT (MU): 017**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Pochant Wildlife Area (WA) is shown on Sheets 1, 2, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map in Sections 26, 27 and 35, T147N, R84W, in McLean County, North Dakota (ND). The MU is on the east side of Pochant's Bay, and is bordered by the Wolf Creek Game Management Area on the north and the Riverdale Golf Course on the south. The MU is located approximately 1.5 miles northeast of Riverdale, ND, from which it is accessed by a 1.5-mile-long dirt road from Riverdale or a 1-mile-long dirt road from County Road 15. The MU contains approximately 74.27 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently sloping uplands that are composed of Mandan silt loams (1 to 3 percent slopes). The riparian valleys, draws, and cliffs are composed of Cabba-Shale outcrop complexes (25 to 60 percent slopes), and Zahl-Cabba complexes (15 to 35 percent slopes). There are two major valley drainages in this MU, both draining into Pochant Bay.

Vegetation. The upland portions of the MU are covered with native and introduced annual grasses; there is also a large coniferous tree planting located on the upland part of the peninsula point. The riparian areas consist mostly of deciduous woody trees and brush. The lower portions of the drainage basins contain a mixture of trees, shrubs, annual grasses, and cattail rushes. Some of the steeper slopes and cliffs have little or no vegetation, except for infestations of Kochia and Russian thistle.

Fish and Wildlife. The MU is frequently used by upland game species such as pheasant, grouse, partridge, and rabbits on a year-round basis. Songbirds use the area throughout the year for brood-rearing and over-wintering. The entire MU is frequented by small rodents, and by avian and furbearing predators. White-tailed deer are also found in this MU on a year-round basis. The lower brushy areas are used by nesting waterfowl for brood-raising. The MU is also frequently used by coyote and red fox as a denning site.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The MU is used for shoreline fishing on a regular basis, and receives heavy use during the fall salmon spawning run. The area is also used heavily by hunters for upland game and big game hunting in the fall. Some occasional wildlife viewing and photography occurs in the spring and summer. There has been off-road vehicle (ORV) use in the entire MU, and several dirt trails are apparent.

Other Important Past Management Activities. There is an agricultural and grazing lease on the north side of Aggie Brown Coulee that is leased to the adjacent land owner.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;



- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.18. LAKESHORE NEAR WOLF CREEK WEST SUBDIVISION**

**MGT. UNIT (MU): 019**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Wolf Creek West Subdivision is shown on Sheets 1, 2, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the NW 1/4 of the NE 1/4 of Section 24, T147N, R84W, in McLean County, North Dakota (ND). This MU is located approximately 4.5 miles northeast of Riverdale, ND. The area is accessed by 4 miles of graveled county road from ND Highway 200. The MU contains approximately 14.75 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU ranges from flat, level areas to steep hillsides and draws. The dominant soil type is Zahl-Max loams (9 to 35 percent slopes).

Vegetation. Vegetation in the area includes native short to mid-grass species, and native shrubs and trees. Predominant trees in the area include cottonwood, green ash, and Russian olive.

Fish and Wildlife. This MU is used by white-tailed deer, cottontail rabbits, red fox, coyote, ring-necked pheasant, and small rodents. Various waterfowl, shorebirds, raptors and songbirds can be found in this MU, depending upon the season.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Wolf Creek West Subdivision, with occasional shoreline fishing. Shoreline use is authorized for this area in the

Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## 7.19. WOLF CREEK RECREATION AREA

## MANAGEMENT UNIT (MU): 020

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Wolf Creek Recreation Area is shown on Sheets 1, 2, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the S ½ of the SW ¼ of Section 18, T147N, R83W and the S ½ of the SE ¼ of Section 13, T147N, R84W, in McLean County, North Dakota (ND). The MU is located approximately 5 miles northeast of Riverdale, ND, just south of Mallard Island. The MU contains approximately 150.89 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by 4 miles of graveled county road leading off paved ND Highway 200.

Topography and Soils. The topography in the Wolf Creek Recreation Area consists of relatively level slopes. The dominant soils consist of Williams-Bowbells loams (1 to 3 percent slopes and 3 to 6 percent slopes), Wilton silt loam (1 to 3 percent slopes), and Zahl-Max loams (9 to 35 percent slopes).

Vegetation. Vegetation in the area includes combinations of non-native grasses, native short- to mid-grass prairie species, native shrubs and trees, and mature shelterbelt plantings. There are several woody draws that extend down the hillside toward the lake that contain mostly cottonwood, green ash, and Russian olive.

Fish and Wildlife. This area is used by white-tailed deer, cottontail rabbits, red fox, coyote, skunk, raccoon, mink, badger, ground squirrels, mice, sharp-tailed grouse, ring-necked pheasant, and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in this area, depending upon the season.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	21,806	2001	26,850
1996	23,185	2002	22,909
1997	25,118	2003	24,577
1998	25,070	2004	19,301
1999	25,667	2005	17,785
2000	36,342	2006	18,451

Recreation. The Wolf Creek Recreation Area is both a campground and day use area. Recreational activities in the area include camping, boating, fishing, hunting, picnicking, sunbathing, and other water activities. The area has always been a very popular primitive camping area. The majority of the people who use the area are repeat visitors who are attracted to the area because of good road and lake access, gently sloping shorelines that allow beaching of boats, and primitive camping facilities that are in close proximity to the shoreline. There are four concrete or concrete plank boat ramps capable of being extended, and two of them were functional during the severe drought of 2004-2005. Primitive camping occurs at 101 sites and 7

group camping areas along graveled loop roads, where picnic tables, grills, trash cans, and vault toilets are provided. Other facilities include a playground, dump station, picnic shelter, and fish cleaning station.

Other Important Past Management Activities. A stockpile of concrete planks has been stored near the ramp to facilitate extending the ramp as lake levels recede during drought.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Provide lake access for fishing, boating, and other water-oriented activities;
- Provide hunting opportunities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote conservation of soil and ground cover in areas where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Provide separate day use and primitive camping areas;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation, bird watching, hiking, sightseeing, and photography;
- Replace the existing kiosk with a recycled plastic kiosk;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Replace the vault toilets to meet Americans with Disabilities Act (ADA) standards;
- Add water hydrants to the west end of the campground;
- Convert 16 primitive camping sites to electrical sites with camping pads;
- Construct a comfort station;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Continue to control off-road vehicle use to preserve soil fertility and vegetative cover;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.20. LAKESHORE NEAR WOLF CREEK EAST SUBDIVISION      MANAGEMENT UNIT (MU): 021**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Wolf Creek East Subdivision is shown on Sheets 1, 2, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the NW 1/4 of NE 1/4 of Section 19, T147N, R83W, in McLean County, North Dakota (ND). This MU is located approximately 5 miles northeast of Riverdale, ND. The area is accessed by 4 miles of graveled county road from ND Highway 200. The MU contains approximately 11.58 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of flat, level areas. The dominant soil type in the area is Falkirk loam (1 to 3 percent slopes).

Vegetation. Vegetation in the area includes native short- to mid-grass prairie species, and native shrubs and trees. Predominant trees in the area include green ash, American elm, cottonwood, and chokecherry.

Fish and Wildlife. This MU is used by white-tailed deer, cottontail rabbits, red fox, coyote, ring-necked pheasant, and small rodents. Various waterfowl, shorebirds, raptors, and songbirds can be found in this MU, depending upon the season.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreation activity at the lakeshore area near Wolf Creek East Subdivision, with occasional shoreline fishing. The boundary is fenced to prevent off-road vehicle use in this area. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;

- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.21. COLEHARBOR WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 022**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Coleharbor Wildlife Area (WA) is shown on Sheets 2 and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in Sections 9, 16, and 17, T147N, R83W, in McLean County, North Dakota (ND). The MU is a wide peninsula reaching out into the Wolf Creek Bay, and is bordered on the north and south by the Wolf Creek WMA. The eastern side of the MU is bordered by private land. U.S. Highway 83 crosses directly through the MU. The MU contains approximately 161.86 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists mostly of gently rolling upland areas composed of Williams-Bowbells loams (1 to 9 percent slopes). The MU also has two areas of Zahl-Max loams (9 to 35 percent slopes) located on the shoreline edges of the MU. The islands consist of low rounded hills that are outcroppings of Russo-Manning course sandy loams (3 to 6 percent slopes). All of the soils are deep, level to rolling, well drained, medium textured glacial till uplands.

Vegetation. The upland portions of the MU consist of native and introduced annual grasses, biennial and perennial weeds, and native forbs. There are several large deciduous and coniferous tree plantings on the upper portions of this MU. Much of the shoreline is infested with Kochia, Canada thistle, and Russian thistle. There is a U.S. Department of Agriculture, Agricultural

Research Service (USDA-ARS) noxious weed biocontrol site located in an infestation of Canada thistle on the western shoreline area. There are also several scattered patches of voluntary trees such as cottonwood, Russian olive, and willow.

Fish and Wildlife. This MU is inhabited by upland game species including pheasant, grouse, partridge, squirrel, and rabbit. The area is used by white-tailed deer, various songbirds, raptors, and furbearers throughout the year. Canadian geese and various waterfowl use the area as a nesting and brood-raising area during the summer months. The islands offshore are used by many shorebirds such as plovers, terns, and gulls. The islands and shoreline of this MU are also potential nesting and feeding areas for the federally listed threatened piping plover and endangered interior least tern.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the MU include shoreline fishing, and hunting of waterfowl, upland game, and big game. The MU is also used as a launching point for access to Mallard Island. Wildlife viewing and photography occur in the MU on a regular basis.

Other Important Past Management Activities. Signage and fencing have been installed to control off-road vehicle (ORV) use that previously occurred in the MU. During the drought years of 1988-1993, the Sakakawea Chapter of Pheasants Forever assisted Corps personnel in wildlife habitat improvements, including planting trees, maintaining a parking lot, and monitoring bluebird houses. Weed barrier fabric and plastic tree shelter tubes were used to protect the seedlings that were planted.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;

- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Continue to enhance native prairie vegetation;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.22. AUDUBON NATIONAL WILDLIFE REFUGE                      MANAGEMENT UNIT (MU): 023**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Fish and Wildlife Service (USFWS)

Location. The Audubon National Wildlife Refuge (NWR) is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North, Coleharbor, and Lake Nettie USGS topographic maps in all or portions of Sections 2-11 and 15-20, T146N, R82W; Sections 1-4, 10, and 12, T147N, R83W; Sections 19, 20, and 28-34, T148N, R82W; and Sections 25, 26, and 33-36, T148N, R83W. The entire MU is located in McLean County, North Dakota (ND). The MU occupies the southeast half of Lake Audubon. The NWR is located just east of U.S. Highway 83 and may be accessed by several county-maintained gravel roads. The USFWS maintains a gravel road adjacent to the southern shore of Lake Audubon. The NWR contains 4,235 acres of project lands, which are included in License DACW-45-3-83-6087 to the USFWS for 14,735 acres of land and water. Within the NWR there are approximately 4,276.76 acres of land (including



approximately 454.62 acres of islands) calculated in ArcView GIS without regard to actual relief, using a Lake Audubon elevation of approximately 1850 feet above mean sea level (msl).

**Topography and Soils.** The topography of the land portion of the NWR is relatively flat with gently rising hills and ridges scattered throughout. The soils are from the Williams-Bowbells association and the Williams association. Williams-Bowbells soils are deep, nearly level to gently rolling, well drained, medium textured and moderately fine textured soils on glacial till plains. Williams soils are deep, nearly level to gently rolling, well drained, medium textured and moderately fine textured soils on glacial till uplands.

**Vegetation.** Grasslands cover more than two-thirds of the NWR and include native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Crop lands make up a fifth of the vegetation cover. Nearly 10 percent of the land portion of the NWR consists of wetlands. There are 74 acres of tree plantings.

**Fish and Wildlife.** The NWR is used year-round by white-tailed deer as a resting, feeding, and fawning area. Permanent wildlife residents of the area include coyote, red fox, mink, raccoon, cottontail rabbit, turkey, beaver, muskrat, ring-necked pheasant, Hungarian partridge, and many species of rodents and songbirds. The aquatic areas are used by waterfowl and shorebirds as nesting areas, brood-raising sites, and staging areas for spring and fall migrations. Hawks, owls, and vultures inhabit the NWR. Whooping cranes have been sighted on the NWR during their spring and fall migrations.

**Visitation.** The Corps does not record visitation for this wildlife management area. The visitation reported by the U.S. Fish and Wildlife Service for this NWR for fiscal years 1995 through 2006 are presented in the following table.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	9,403	2001	16,920
1996	7,269	2002	22,450
1997	9,300	2003	22,834
1998	11,189	2004	18,804
1999	10,674	2005	19,297
2000	12,754	2006	30,000

**Recreation.** Bird watching, wildlife photography, and nature study are favored activities at the NWR. The NWR is open to big game and upland game hunting. In the winter, frozen Lake Audubon is open to ice fishing. The USFWS has a self-guided auto tour along the southern shore of the refuge.

**Other Important Past Management Activities.** Lake Audubon and the surrounding uplands were purchased by the Corps as part of the Garrison Dam – Lake Sakakawea Reservoir project and the Corps holds the title to this area on behalf of the public. The Corps' 1955 General Plan for Lake Sakakawea provided the authority for the USFWS to manage Lake Audubon and the adjacent uplands (26,020 acres) as part of the National Wildlife Refuge System. The USFWS accepted management authority for Lake Audubon on May 25, 1956. In October of 1956, a cooperative agreement was finalized between the USFWS and the North Dakota Game and Fish Department (NDGFD) transferring management responsibility for the north portion of Lake Audubon to the NDGFD. The northern portion of the lake, comprising 10,751 leased acres of land and water, is commonly referred to as Audubon Wildlife Management Area (WMA). The USFWS manages

Audubon National Wildlife Refuge (NWR) which includes 14,735 acres of open water lake, islands, shallow-water wetlands, and upland habitats. In 1982, the General Plan for directing the overall management of Lake Audubon was updated. Audubon WMA and NWR were established, in part, to mitigate environmental impacts associated with the construction and operation of Garrison Dam.

Lake Audubon also serves as a supply reservoir for the Garrison Diversion Municipal, Rural, and Industrial Water Supply Project. The lake elevation of Lake Audubon is cooperatively managed by the Bureau of Reclamation, the NDGFD, and the USFWS. The U.S. Bureau of Reclamation maintains water levels in Lake Audubon by pumping water from Lake Sakakawea across the Snake Creek Embankment and by releasing water through the McClusky Canal. Several of the islands in Lake Audubon have experienced severe erosion problems due to elevated lake levels. Consequently the Bureau of Reclamation has completed several mitigation projects to protect shorelines of islands in the lake. These projects include armoring shorelines, planting vegetation, and placing riprap. The NWR has several infestations of Canada thistle which the USFWS has combated through a multiple-discipline suppression program.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Provide habitat for migratory birds, especially waterfowl, threatened and endangered species, and resident wildlife;
- Provide environmental education to the public;
- Protect and enhance natural ecological communities;
- Promote compatible public use and recreation, including hunting, ice fishing, wildlife observation, and photography;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Control shoreline erosion where problems exist;
- Maintain/manage wetlands for wetland species, resident and migratory waterfowl and shorebirds, and threatened and endangered species;
- Manipulate water levels for wetlands management while ensuring the integrity of the Snake Creek Embankment;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;

- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats.

### 7.23. McCLUSKY CANAL

### MANAGEMENT UNIT (MU): 024

Land Classification. Project Operations

Managing Agency. U.S. Bureau of Reclamation

Location. This MU is shown on Sheet 2 (of 22) in Appendix A. It is located on the Lake Nettie USGS topographic map in the SW 1/4 of the NW 1/4 of Section 11, T147N, R82W, in McLean County, North Dakota (ND). This MU is located 6 miles east and 1/2 mile north of Coleharbor, ND on McLean County Road 23. The MU contains approximately 23.72 acres of project lands calculated in ArcView GIS without regard to actual relief, using a Lake Audubon elevation of approximately 1850 feet above mean sea level (msl).

Topography and Soils. This MU contains the McClusky Canal, a deep canal with steep sides created by engineered cuts and fills. The Bureau of Reclamation constructed the McClusky Canal as a part of the Garrison Diversion Project, to transport water from Lake Audubon to central and eastern North Dakota for municipal, rural, and industrial water supply and agricultural irrigation needs. The soils in the MU are from the Williams association and are mostly a fine textured glacial till soil. Most of the soil was removed during the canal construction.

Vegetation. The MU was planted with crested wheatgrass after the canal was completed. Mixed native prairie grasses, some shrubs, and a few small trees can be found in the upland canal area.

Fish and Wildlife. The MU is used by waterfowl for nesting, brood rearing, feeding, and resting. The canal is also inhabited by upland game birds and songbirds. Mammalian wildlife includes furbearers and rodents. The canal carries a variety of fish that enter the canal via Lake Audubon.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this area.

Recreation. Some shore fishing, wildlife viewing, hunting, and sightseeing occurs in the project area. Hunting is managed by the U.S. Fish and Wildlife Service (USFWS), and hunting regulations are consistent with those in effect at the Audubon NWR. However, this area is not conducive to more recreational uses because of the canal structures and the steep canal slopes.

Other Important Past Management Activities. This MU was part of the Audubon NWR until it was removed from the NWR for construction of the canal.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this MU include the following, not in priority order:

- Manage resources in cooperation with the Bureau of Reclamation as needed;
- Maintain and operate the McClusky Canal and associated structures in a manner that allows them to effectively fulfill project purposes;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Provide for hunting on adjacent project areas;

- Provide for non-consumptive use of resources such as hiking, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Upgrade and maintain the quality of habitat for a variety of wildlife species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this project operations area include the following, not in priority order:

- Provide any facility or equipment replacements needed to ensure the regular operation of the McClusky Canal;
- Provide appropriate protection for any cultural resources;
- Provide for access for hunters to the adjacent NWR;
- Plant trees and shrubs to increase winter cover, woody vegetation, and food sources for wildlife;
- Enhance grassland vigor by mowing or a rotational system of haying;
- Control noxious weeds in cooperation with the USFWS.

#### **7.24. LAKESHORE NEAR SNAKE CREEK COTTAGE SITE                      MANAGEMENT UNIT (MU): 026**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Snake Creek Cottage Site is shown on Sheet 3 (of 22) in Appendix A. It is located on the Coleharbor NW USGS topographic map in Sections 7 and 12, T148N, R82W, in McLean County, North Dakota (ND). This MU is adjacent to the Snake Creek Cottage Site located near the north shore of Lake Audubon. It is accessed by paved ND Highway 37, approximately 5 miles east of US Highway 83. The MU contains approximately 120.30 acres of project lands calculated in ArcView GIS without regard to actual relief, using a Lake Audubon elevation of approximately 1850 feet above mean sea level (msl).

Topography and Soils. The topography in this area ranges from flat to rolling hillsides. Williams soils predominate and consist of deep, nearly level to gently rolling, well drained soils. These soils formed in loamy glacial till. The major soil types in the MU are the Williams-Bowbells loams and the Williams-Bowbells-Zahl loams.

Vegetation. Vegetation in the area consists primarily of native and non-native short- to mid-grass prairie species. Trees and shrubs include green ash, American elm, chokecherry, and American plum.

Fish and Wildlife. The MU is directly adjacent to the Audubon Wildlife Management Area, managed by the ND Game and Fish Department. The area is inhabited by white-tailed deer, furbearers, upland game birds, songbirds, and waterfowl. Landowners in the adjacent Snake Creek Cottage Site are concerned with the destruction of trees, lawns, and crops by the large numbers of beaver and waterfowl that frequent the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreation activity at the lakeshore area near Snake Creek Cottage Site, with occasional shoreline fishing. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The Snake Creek Cottage Site adjacent to this MU is comprised of 123 lots that were platted on project lands and then sold by the Corps between 1958 and 1964.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order: (Jerry has not updated these yet.)

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.25. LAKESHORE NEAR TOTTEN TRAIL SUBDIVISION**

**MANAGEMENT UNIT (MU): 027**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Totten Trail Subdivision is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map in Section 21, T148N, R83W, in McLean County, North Dakota (ND). This MU is adjacent to the Totten Trail Subdivision, which is located near the north shore of Lake Audubon. It is accessed east from U.S. Highway 83 on the north end of the Snake Creek embankment. The MU contains approximately 8.36 acres of project lands calculated in ArcView GIS without regard to actual relief, using a Lake Audubon elevation of approximately 1850 feet above mean sea level (msl).

Topography and Soils. The topography in this area ranges from flat to rolling hillsides. Williams soils predominate and consist of deep, nearly level to gently rolling, well drained soils. These soils formed in loamy glacial till. The major soil type in the MU is the Williams-Bowbells-Zahl loams.

Vegetation. Vegetation in the area consists primarily of native and non-native short to mid-grass prairie species.

Fish and Wildlife. Wildlife that may be viewed include white-tailed deer, furbearers, songbirds, and waterfowl species.

The MU is directly adjacent to the Audubon Wildlife Management Area, managed by the ND Game and Fish Department (NDGFD). The area is inhabited by white-tailed deer, furbearers, upland game birds, songbirds, and waterfowl. Landowners in the adjacent Totten Trail Subdivision are concerned with the destruction of trees, lawns and crops by the large numbers of beaver and waterfowl that frequent the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreation activity at the lakeshore area near Totten Trail Subdivision, with occasional shoreline fishing. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The Corps obtained 9 acres from the NDGFD in 1992 for construction of a camp loop in the East Totten Trail Recreation Area adjacent to the MU. Erosion control may be needed if the resulting increase in shoreline use at East Totten Trail Recreation Area results in safety concerns regarding shoreline and lake access at the lakeshore area near Totten Trail Subdivision.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote soil conservation, water quality, and public safety by facilitating control of shoreline erosion where problems exist;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Facilitate control of shoreline erosion where problems exist;
- Control noxious weeds.

## **7.26. EAST TOTTEN TRAIL RECREATION AREA**

**MANAGEMENT UNIT (MU): 028**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The East Totten Trail Recreation Area is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map in Sections 21 and 28, T148N, R83W, in McLean County, North Dakota (ND). The MU is located approximately 42 miles south of the city of Minot and 58 miles north of the city of Bismarck, ND. It is located on the north shore of Lake Audubon with easy access from U.S. Highway 83 by a Corps-maintained paved road. The MU contains approximately 24.68 acres of project lands calculated in ArcView GIS without regard to actual relief, using a Lake Audubon elevation of approximately 1850 feet above mean sea level (msl).

Topography and Soils. The topography in East Totten Trail Recreation Area ranges from flat terrain to gently rolling hills. Approximately 90 to 95 percent of the soils in the area consist



primarily of Williams-Bowbells loams (3 to 6 percent slopes). These soil types are well drained and only slightly susceptible to erosion.

**Vegetation.** Vegetation in the MU includes combinations of non-native grasses and native short to mid-height grass species; native shrubs and trees; and mature shelterbelt plantings consisting of Siberian elm, Russian olive, and green ash. Two small low areas support phragmites and associated wetland vegetation types.

**Fish and Wildlife.** Songbird species are primarily observed in the area. There is an artificial nest box trail consisting of eight bluebird nest boxes. The MU receives limited, infrequent use by furbearers, game birds, and white-tailed deer. Waterfowl species utilize the recreation area during the spring and fall for nesting and migration. Numerous nesting pairs of Canada geese occupy the camp loop early in the recreation season causing some minor conflicts. No threatened or endangered species utilize the MU.

**Visitation.** The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	46,718	2001	43,272
1996	45,768	2002	58,081
1997	48,239	2003	56,021
1998	48,060	2004	51,686
1999	49,131	2005	51,147
2000	42,916	2006	51,571

**Recreation.** The East Totten Trail Recreation Area provides the only poured-in-place boat ramp on Lake Audubon. Lake Audubon has an excellent fishery that is a major attraction at this MU. One camping loop has 30 campsites with picnic tables, fire rings, water, and electrical hookups (23 with 30-amp, 7 with 50-amp). Another loop has 10 sites, each with a table and fire ring, for primitive and overflow camping. A group picnic area contains picnic tables, grills and horseshoe pits. Three vault toilets, a fish cleaning station, and a dump station are also located in the MU. The historic Totten Trail crosses the area but is not adversely affected by the recreational uses.

**Other Important Past Management Activities.** In the 1978 Master Plan, the Totten Trail Recreation Area consisted of land on both sides of U.S. Highway 83. Proposed development consisted of day use facilities on the east side and a Class "B" campground on the west. Most of the initial development occurred east of the highway, including the picnic area and boat ramp. This also became the favorite location for campers. The primitive camping area was rehabilitated in 1992 and 1993 into a Class "B" campground to alleviate traffic and safety concerns regarding the high number of campers using the boat ramp area as well as to meet public recreational needs, and later a second loop for primitive and overflow camping was developed. Development plans for the day use area included picnic shelters and multi-purpose courts in addition to the facilities listed among the development needs.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Provide lake access for fishing, boating, and other water-oriented activities;
- Improve circulation roads;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat and wetland areas for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade the campground areas with modern amenities;
- Install playground equipment;
- Provide electricity to the existing primitive sites;
- Upgrade the existing electrical sites;
- Install a water hydrant in the primitive loop;
- Replace the existing kiosks with recycled plastic kiosks;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Pave the existing roadway and pads;
- Improve the existing road at the dump station and fish cleaning station;
- Construct a comfort station;
- Construct an overflow parking area (20,000 square feet);
- Continue to construct or improve boat ramps;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Control shoreline erosion if needed to protect recreation facilities and prevent soil loss;
- Provide appropriate protection for any cultural resources;
- Maintain the bluebird nest box program for wildlife interpretation and habitat;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## 7.27. SNAKE CREEK PUMPING STATION

MANAGEMENT UNIT (MU): 029

Land Classification. Project Operations

Managing Agency. U.S. Bureau of Reclamation

Location. This MU is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map in the SW 1/4 of the NW 1/4 of Section 28, T148N, R83W, in McLean County, North Dakota (ND). The MU is located on the west side of U.S. Highway 83, 4 miles north of Coleharbor, ND. The MU contains approximately 43.69 acres of project lands calculated in ArcView GIS without regard to actual relief, using a Lake Sakakawea and Lake Audubon elevation of approximately 1838 and 1850 feet above mean sea level (msl), respectively.

Topography and Soils. The MU is an area that has been raised up and leveled off by engineered cuts and fills to serve as a platform for the pumping station. The sides have been riprapped to prevent shoreline erosion.

Vegetation. Vegetation on this MU consists of landscaped grass lawns and ornamental trees and bushes. Wetland basins with dikes are within the National Wildlife Refuge on Lake Audubon. The wetlands were created by Bureau of Reclamation as part of the Garrison Diversion Unit Project for Refuge mitigation.

Fish and Wildlife. Cottontail rabbits and several species of rodents and songbirds are year-round residents of the MU.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this area.

Recreation. Shore fishing in the spring, summer, and fall is the primary recreational use in the area. The MU is also an unofficial access point to Lake Sakakawea for ice fishing in the winter. Ice fishing at Lake Sakakawea can be accessed from the steep-sided MU by either crawling across the riprap on the slopes or walking around the Lake on the north side of Snake Creek Pumping Plant to natural landscape. Some scheduled tours also occur at the pumping station. Visitors are given an oral presentation on the McClusky Canal and how it relates to the Snake Creek Pumping Plant.

Other Important Past Management Activities. The pumping station transfers water under Highway 83 from Lake Sakakawea to Lake Audubon. Water is then transferred from Lake Audubon to the McClusky Canal for use in the Garrison Diversion Project for municipal, rural, and industrial water supply and agricultural irrigation needs.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this MU include the following, not in priority order:

- Maintain and operate project structures in a manner that allows them to effectively fulfill project purposes;

- Provide interpretation of the natural and ecological resources found in the area and information on the function of the Snake Creek Pumping Station and Garrison Diversion Project;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Provide for non-consumptive use of resources such as hiking, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Upgrade and maintain the quality of habitat, including wetlands, for a variety of wildlife species;
- Promote ecological integrity by controlling noxious weeds;
- Operate the pumping plant and manage Lake Sakakawea surface elevations within guidelines of the Interim Operating Agreement between the Corps, Bureau of Reclamation, U.S. Fish and Wildlife Service, and North Dakota Game and Fish Department, dated May 22, 1996;
- Provide appropriate stabilization measures on Lake Audubon;
- Cooperation between the Corps and the Bureau of Reclamation as needed.

Development Needs. Development needs for this project operations area include the following, not in priority order:

- Provide any facility or equipment replacements needed to ensure smooth operation of the pumping station;
- Provide appropriate protection for any cultural resources;
- Plant trees and shrubs to increase winter cover, woody vegetation, and food sources for wildlife;
- Enhance grassland vigor by mowing or a rotational system of haying;
- Update interpretive displays for visitors;
- Enhance the quality of the wetlands created by the Bureau of Reclamation on the National Wildlife Refuge for resident and migratory species;
- Control noxious weeds.

#### **7.28. SNAKE CREEK EMBANKMENT**

**MANAGEMENT UNIT (MU): 030**

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Snake Creek Embankment is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North topographic map in Sections 28 and 33, T148N, R83W, and Section 4, T147N, R83W, in McLean County, North Dakota (ND). This MU is bordered on the north by the Snake Creek Pumping Plant and on the south by the Wolf Creek Wildlife Management Area (WMA) and the Audubon National Wildlife Refuge (NWR). The MU is located 2.5 miles north of Coleharbor, ND. The MU contains approximately 46.75 acres of project lands calculated in ArcView GIS without regard to actual relief, using a Lake Sakakawea and Lake Audubon elevation of approximately 1838 and 1850 feet above mean sea level (msl), respectively.

Topography and Soils. The topography reflects the fact that the Snake Creek Embankment is a causeway separating Lake Sakakawea from Lake Audubon and was built to provide access for the four-lane U.S. Highway 83 and the Soo Line Railroad. The top of the embankment is flat and narrow. The side slopes of the embankment are 2.5 vertical to 1 horizontal and covered with large rock riprap, which is 2 to 5 feet in diameter. The soils are fill materials used to build the causeway. Both sides of the causeway are protected with rock riprap to prevent erosion. The soils are cut and fill.

Vegetation. Vegetation consists of undesirable weeds growing among the riprap.

Fish and Wildlife. Rodents may use the riprap as a den site.

Visitation. The Corps does not record visitation at this project operations area.

Recreation. The MU offers limited recreational opportunities. The area could serve as an observation overlook of Lake Sakakawea.

Other Important Past Management Activities. To ensure the integrity of the Snake Creek embankment, when drought resulted in a pool elevation of Lake Sakakawea that was more than 36.5 feet below that of Lake Audubon, the level of Lake Audubon was lowered to limit the difference in pool elevations to 36.5 feet.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this project operations area include the following, not in priority order:

- Maintain and operate project structures in a manner that allows them to effectively fulfill project purposes;
- Maintain the operational integrity of the causeway and related facilities;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Provide for an opportunity to view Lake Audubon and Lake Sakakawea while driving;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Monitor habitat for threatened and endangered species in coordination with the U.S. Fish and Wildlife Service;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Promote structural integrity of the riprapped area by controlling weedy vegetation.

Development Needs. Development needs for this project operations area include the following, not in priority order:

- Provide for materials and equipment for repairs, replacements, and rehabilitation to ensure the integrity of the embankment;
- Provide appropriate protection for any cultural resources;
- Control weedy vegetation growing in the riprapped area.

## 7.29. WEST TOTTEN TRAIL RECREATION AREA

MANAGEMENT UNIT (MU): 032

Land Classification. Recreation

Managing Agency. McLean County Park Board

Location. The West Totten Trail Recreation Area is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the N 1/2 of Section 29, T148N, R83W, in McLean County, North Dakota (ND). The MU contains approximately 12.09 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a gravel road approximately 1/4 mile long west from U.S. Highway 83 just north of the Snake Creek Pumping Station.

Topography and Soils. The area is nearly level to gently rolling and moderately well drained. The soils in the area consist of Williams-Bowbells association. The MU has medium textured and moderately fine textured soils on glacial till plains.

Vegetation. The West Totten Trail Recreation Area consists of approximately 75 percent grasslands with scattered tree plantings in the remaining areas. The grassland ecosystem consists of native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. The MU has a noxious weed problem that is kept under control by the lessee.

Fish and Wildlife. Red fox, raccoon, cottontail rabbit, and several species of rodents inhabit this area. Avian species consist of upland game birds, waterfowl, songbirds, shorebirds, and an occasional raptor.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	8,032	2001	10,222
1996	8,226	2002	5,083
1997	9,735	2003	3,035
1998	9,109	2004	2,102
1999	8,204	2005	1,937
2000	9,571	2006	2,156

Recreation. The West Totten Trail Recreation Area is managed as a day use area. The major activities in the area include boating and fishing. Other activities include sightseeing and picnicking. The McLean County Park Board began managing the area in 1990 under a lease agreement. Since that time, the MU has received very limited development. Facilities include a boat ramp and vault toilets.

Other Important Past Management Activities. The 1978 Master Plan proposed a "Class B" campground for this area, which originally contained 160 "blocked-out" acres of land and water. However, a primitive campground was developed at the East Totten Trail Recreation Area on the other side of U.S. Highway 83, and the campground there was upgraded in the 1990s. The 10-

year development plan for West Totten Trail prepared by McLean County in 1990 included 24 to 36 campsites, but the development plan was modified in 1993 to allow for only day use activities in the 12-acre ramp area. The remaining area in this MU was relinquished to the Corps, which in 2006 included the lands above 1850 feet msl in a lease to the North Dakota Game and Fish Department.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Control noxious weeds;
- Continue to maintain the boat ramp;
- Provide appropriate protection for any cultural resources;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.30. SPORTSMEN'S CENTENNIAL PARK**

**MANAGEMENT UNIT (MU): 033**

Land Classification. Recreation

Managing Agency. McLean County Park Board

Location. The Sportsmen's Centennial Park is shown on Sheets 2, 3, and 4 (of 22) in Appendix A. It is located on the Riverdale North USGS topographic map, in the NE 1/4 of Section 25, of T148N, R84W, in McLean County, North Dakota (ND). The area is located on the north shore of Lake Sakakawea south of the Custer Mine State Game Management Area and just south of the Soo Line railroad tracks before the line continues north. The MU contains approximately 64.13 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a gravel road 2 miles long off of ND Highway 37.

**Topography and Soils.** The topography in the area is nearly level to gently rolling and moderately well drained. The MU contains soils of the Williams-Bowbell association, which consists of medium textured and moderately fine textured soils on glacial till plains.

**Vegetation.** The MU consists almost completely of native grasses (44 acres) and old field grasses (16 acres). Included in this plant community are native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. The area also contains one acre of established shelterbelt trees and one acre of native tree species.

**Fish and Wildlife.** Most fish and wildlife in this area come from the Custer Mine State Game Management Area, which borders the MU to the north, and the DeTrobriand WMA that borders the MU on the east and west. White-tailed deer, cottontail rabbit, skunk, badger, and raccoon may occasionally be seen in the area. Avian species which use the MU include songbirds, raptors, upland game birds, waterfowl, and shorebirds.

**Visitation.** The number of visits recorded by the U. S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	22,201	2001	17,658
1996	23,843	2002	24,761
1997	23,193	2003	21,773
1998	27,392	2004	22,584
1999	23,515	2005	16,878
2000	21,037	2006	15,534

**Recreation.** The main recreational opportunities offered in the MU are camping and fishing. Limited day use activities include sightseeing, picnicking, volleyball, and softball. A third-party concessionaire offers food, bait, and camping supplies from May through October. Recreational facilities include 3 boat ramps, boat docks, a flush toilet, showers, and meeting room at the concession building; 110 campsites with picnic tables, fire rings, and 23 electrical hookups (9 20-amp and 14 30-amp); 3 restrooms; a fish cleaning station; a playground; a group picnic shelter; and parking lots. In 2007, a new low-water boat ramp consisting of steel plates funded by the ND Game and Fish Department was installed on the point to the southeast of the old ramp, and a new access road was constructed.

**Other Important Past Management Activities.** This MU was managed by the Benedict Sportsmen's Club of Benedict, ND until 1988. The McLean County Park Board's lease began in 1990.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;



- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Add more electrical sites at campground if needed;
- Add more primitive camping sites if needed;
- Upgrade the fish cleaning station and add another fish cleaning station as needed;
- Add more bathroom facilities as needed;
- Upgrade and add picnic tables as needed;
- Upgrade ramps and docks as needed;
- Replace playground and recreation area equipment as needed;
- Provide additional facilities if needed to meet public demand;
- Expand the hiking trail, with possible connection to a visitor site at railroad crossing if the Heritage Railroad system is developed that far;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Replace trees as needed;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.31. FORT STEVENSON STATE PARK**

**MANAGEMENT UNIT (MU): 034**

Land Classification. Recreation

Managing Agency. North Dakota Parks and Recreation Department (NDPRD)

Location. Fort Stevenson State Park (SP) is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map within the SE ¼ of Section 30, the E ½ of Section 31, and the W ½ of Section 32, T148N, R84W, in McLean County, North Dakota (ND). It is situated on the north shore of Lake Sakakawea and along the southeast shore of Garrison Bay, approximately 4 miles directly south of the city of Garrison, ND. The SP contains 438.0 leased acres with an elevation of at least 1850 feet above mean sea level (msl) and

approximately 527.07 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet msl. The SP is accessed from ND Highway 37 by a paved county road 3 miles long.

Topography and Soils. Soils in the SP are primarily well drained and are only slightly susceptible to erosion. Soils consist mainly of Williams-Bowbells loam (1 to 3 percent slope), Zahl-Williams loam, Zahl-Max loam, and Rhoades complex. In the Stevenson North Grasslands, three minor draws with slight to severe slopes lead to the lakeshore. Shoreline erosion has caused high cutbanks to form along the western side of the peninsula. While environmentally damaging, the cutbanks have exposed interesting geological features, including petrified wood.

Vegetation. An aggressive tree planting program has been conducted in the SP, and an extensive native prairie restoration program is ongoing. Much of the SP is currently in shelterbelt plantings consisting of native shrubs and trees including cottonwood, Siberian elm, Russian olive, box elder, and green ash. The thickly planted shelterbelts offer the first significant canopy vegetation west of Totten Trail. Combinations of native and non-native short- and mid-grass prairie species with native forbs and wildflowers make up the remaining vegetative cover of the SP. The DeTrobriand Bay Recreation Area, north of the marina, was acquired for inclusion in the SP as the location for privately developed recreational facilities. This 23-acre area remains undeveloped and is maintained as a wildlife management area, with wildlife food plots provided by a local farmer under a sharecropping agreement. The majority of the Stevenson North Grasslands is a mixed grass prairie with some tree plantings. The draws leading to the lakeshore contain a mixture of prairie grass, low shrubs, and trees. Noxious weeds in the MUs comprising the expanded SP include Canada thistle, leafy spurge, wormwood, and (likely in the near future) salt cedar.

Fish and Wildlife. The SP and Fort Stevenson North Grasslands are used year-round by white-tailed deer, red fox, raccoon, beaver, badger, mink, rabbit, skunk, prairie dogs, ground squirrels, and other rodent species. Avian residents include turkey, ring-necked pheasant, Hungarian partridge, and several species of songbirds. The Fort Stevenson North Grasslands are used in the spring, summer, and fall by waterfowl as a nesting, brood raising, and staging site. An occasional raptor will be sighted. At the SP during the winter months, incursions of white-tailed deer from the surrounding area become of special concern, as the deer destroy many young tree plantings. Limited bow hunting is allowed at Fort Stevenson SP to limit natural resource damage caused by excessive deer population numbers.

Visitation. The visits recorded by the U.S. Army Corps of Engineers (Corps) at this SP during fiscal years 1995 through 2006 are found in the visitation section of Chapter 2. A fiscal year extends from October 1 through September 30 of the next calendar year.

The NDPRD records visitation by calendar year, not fiscal year, and calculates the number of visitors by a different method than the Corps uses. The visitors recorded by NDPRD at Fort Stevenson SP during calendar years 1995 through 2006 are presented in the following table. Over the 1995-2006 time period, campers constituted over 16 percent of the total visitors to the SP. The number of campers, which are included in the total number of visitors, is based on an NDPRD estimate of 3.3 persons per occupied campsite. In 2006, the three rental cabins were occupied for a total of 231 nights (an average of 77 nights per cabin) and accommodated a total of 955 persons, the highest rental cabin occupancy rate among the three State Parks at Lake Sakakawea. Cabin renters are included in the number of total visitors, but not in the number of campers, in the table below.

Year	Total Visitors	Campers	Year	Total Visitors	Campers
1995	108,156	19,368	2001	114,468	19,562
1996	97,188	14,725	2002	117,498	18,058
1997	115,937	17,117	2003	118,866	17,516
1998	124,182	18,299	2004	115,889	16,863
1999	124,155	20,875	2005	99,333	18,932
2000	119,046	20,635	2006	104,591	17,153

**Recreation.** Fort Stevenson SP receives heavy recreational use and is host to the annual Governor's Cup Fishing Tournament, several fishing derbies, and the Cycling around North Dakota in Sakakawea Country (CANDISC) Bike Tour. NDPRD records indicate that between 1995 and 2005, about 16 percent of visitors to the SP engaged in camping. The SP has a full-service campground with 175 campsites, of which 137 have water and electrical hookups (84 30-amp and 53 50-amp) and 30 have sewer hookups); 3 rental cabins; and a sanitary dump station. An amphitheater is used by SP staff and guest presenters to provide programming and interpretation. Day-use recreation activities include boating, shoreline and boat fishing, swimming, picnicking, bow hunting for deer after the park has closed for the recreational season, bird watching, wildlife observation, trail activities, and sightseeing. Day use facilities include 2 boat ramps; a fish cleaning station; 2 group picnic areas and 2 group picnic shelters, with a total of 30 picnic tables; a swimming beach; a basketball court; a volleyball court; 3 playgrounds; and fitness and nature trails. Other facilities at the SP include an entrance station, an office building, a maintenance shop, 8 parking lots with security lighting, and 9 restrooms with a total of 10 showers. The Flickertrail, a 4.6-mile-long, 3- to 6-foot-wide single-track unpaved trail with several interconnecting loops for walking, hiking, and mountain biking, is scheduled for construction in 2007 using Lewis and Clark Legacy Trail cost-shared funding. The full-service marina with boat fuel pump, snack bar, and grocery are operated by a concessionaire when available, and otherwise by State Park staff. However, the marina is not functional when lake levels are very low. A new marina that will accommodate low water levels is planned, and some Federal funds have been appropriated for the project, but construction funds had not been approved at the time this Master Plan/EA was prepared.

**Other Important Past Management Activities.** The land classification of the 23-acre area known as the DeTrobriand Bay Recreation Area was revised from Wildlife Management to Recreation by Master Plan Supplement 2, approved in July 1984, and was incorporated into NDPRD's lease for Fort Stevenson SP. The Fort Stevenson North Grasslands portion of the SP was previously managed by the Corps as a vegetative management area in a manner consistent with the potential for northward expansion of Fort Stevenson SP into the area.

**Cultural Resources.** Fort Stevenson, named after Major General Isaac Stevenson of Civil War fame, also has an interesting history as an outpost on the Missouri River. The NDPRD has made a concerted effort to bring this history to life by organizing a citizens' group for the preservation and interpretation of its historical significance. The reconstruction of Fort Stevenson's entrance/guard building was completed in 2001; it houses a museum and interpretive center focusing on cultural and historical interpretation of the 1870's-1890's frontier military post period. Prior to any future development at or near Fort Stevenson SP, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Promote prevention of the spread of aquatic nuisance species;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide opportunities for limited hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote increased interpretation of historic resources related to the Fort Stevenson military outpost;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Develop a deep-water marina;
- Expand the ramp, parking, and fish-cleaning facilities at Garrison Bay;
- Construct shoreline fishing access piers and jetties that meet Americans with Disabilities Act (ADA) standards;
- Provide development opportunities to concessionaires for water-related activities;
- Enhance concession facilities to include boat repair and storage facilities, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Expand visitor service facilities;
- Coordinate with other entities to provide educational signage for preventing the spread of aquatic nuisance species;
- Coordinate with other entities to provide facilities for hosing down boats and trailers to prevent the spread of aquatic nuisance species;
- Develop a primitive group camping area in the Fort Stevenson North Grasslands;
- Construct additional semi-modern and modern overnight rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Upgrade the campground utilities and facilities to meet current visitor expectations;
- Develop interpretive facilities, including signage and a kiosk, for the trail system;
- Develop a nature trail in the Fort Stevenson North Grasslands area;
- Reconstruct additional structures associated with the Fort Stevenson military outpost, and provide interior and exterior furnishings, as funding becomes available;
- Develop interpretive facilities as appropriate for the reconstructed structures;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;

- Stabilize the shoreline where needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access for limited hunting on adjacent project lands if needed to control deer populations;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.32. GARRISON BOAT AND CAMPER CLUB LEASED AREA**

**MANAGEMENT UNIT: 035**

Land Classification. Recreation

Managing Agency. Garrison Boat and Camper Club

Location. The Garrison Boat and Camper Club is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the NE 1/4 of Section 30, T148N, R84W, in McLean County, North Dakota (ND). It is located on the north shore of Lake Sakakawea approximately 3½ miles directly south of the City of Garrison, ND and contains approximately 18.41 acres calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed from Garrison, ND by a 3.5-mile paved and gravel road.

Topography and Soils. The topography in the area consists of relatively level prairie cut by numerous wooded and brushy intermittent drainages. Dominant soil types are Cabba loam (15 to 35 percent slopes) and Ringling-Cabba complex (9 to 35 percent slopes).

Vegetation. Vegetation consists of native prairie grass on the slopes and lower elevations and small brushy plants in the draws. There are also patches of creeping juniper and buffaloberry, prairie rose, green ash, American elm, cottonwood, and chokecherry. Vegetation on the hills is primarily crested wheatgrass.

Fish and Wildlife. This MU is used by white-tailed deer, coyote, red fox, mink, raccoon, sharp-tailed grouse, ring-necked pheasant, and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in this MU.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this MU.

Recreation. The Garrison Boat and Camper Club manages this MU as a quasi-public recreation area. Quasi-public is a term used for areas that are available to members only; however, membership is required to be all inclusive and non-discriminatory. Facilities at this MU include a boat ramp, boat docks, campsites, a clubhouse, a boat and camper storage area, 4 vault toilets, and a gravel circulation road.

Other Important Past Management Activities. The Corps previously managed the issuance of Shoreline Use Permits within this MU. Because the Corps has no authority to issue permits in an outgranted area, all existing permits were "grandfathered", and the Corps determined it would not issue any additional Shoreline Use Permits.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Improve existing access and circulation roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Build a floating dock that accommodates three watercraft and can be removed during the winter months and put into storage;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Update the road to include speed bumps;
- Improve the 4 vault toilets;
- Landscape around the vault toilets;
- Develop a playground area, potentially near the new clubhouse, that will not be impacted by high water levels;
- Upgrade the 20-amp electrical service to 30 amps for each campsite;
- Replace dead trees in the shelterbelt;
- Plant new trees for shade and wildlife habitat;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.33. LAKESHORE NEAR LAKEVIEW ESTATES SUBDIVISION**

### **MANAGEMENT UNIT: 036**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Lakeview Estates Subdivision is shown on Sheet 4 (of 22) in Appendix A of this Master Plan. It is located on the Garrison Dam North USGS topographic map, in the N 1/2 of the NW 1/4 of Section 30, T148N, R84W, in McLean County, North Dakota (ND). This management unit (MU) is located on the eastern shore of Garrison Bay approximately 2 miles south of Garrison, ND. The area is accessed by 2 miles of paved and graveled county road from ND Highway 37. The MU contains approximately 14.14 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of rolling to steep upland topography. The northern half of this MU consists of Zahl-Cabba loams (15 to 35 percent slopes). The southern half is primarily Zahl-Max loams (9 to 35 percent slopes).

Vegetation. Vegetation in the area includes native and non-native short to mid-grass prairie species, and native shrubs and trees. Predominant trees in the area include cottonwood, Russian olive, and green ash.

Fish and Wildlife. Red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many rodent species inhabit this area. Avian species include upland game birds, waterfowl, shorebirds and songbirds.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating and shoreline fishing are the primary recreational activities at the lakeshore area near Lakeview Estates Subdivision. Hunting, wildlife viewing, bird watching, and hiking occur on a 13-acre field of project lands that separates the north and south sections of the subdivision and contains a wildlife food plot. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;

- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.34. GARRISON BAY WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 037**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Garrison Bay Wildlife Area (WA) is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison and Garrison Dam North USGS topographic maps, in the SE ¼ of Section 13, SE ¼ of Section 24, and E ½ of Section 25, T148N, R85W; and the S ½ of Section 18, much of Section 19, and NW ¼ of Section 30, T148N, R84W, in McLean County, North Dakota (ND). The northern portion of the MU is located approximately 0.5 mile southwest of Garrison, ND. The area is accessed by 0.5 to 2.5 miles of graveled county road from ND Highway 37 at Garrison, ND. The MU contains approximately 442.40 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Garrison Bay Wildlife Area consists of moderately rolling to steep slopes. Orthents, loamy, is a soil type that occurs at spoil banks and spoil piles in areas that have been strip mined; it has little agricultural value. The dominant soil types in the remainder of the MU include Williams-Bowbells loams (1 to 3 percent slopes), Zahl-Max loams (9 to 35 percent slopes), and Zahl-Cabba complex (15 to 35 percent slopes). Zahl-Cabba complex and Zahl-Max loams are well drained, have rapid to very rapid runoff, and are highly susceptible to erosion. Williams-Bowbells loams are well drained, have medium runoff, and are slightly susceptible to erosion.



Vegetation. The spoil piles are sparsely vegetated. Riparian vegetation dominates the shoreline area near Garrison Bay and its tributaries. Grasslands, consisting primarily of crested wheatgrass, cover the remainder of the MU. Several major patches of leafy spurge are scattered throughout the MU, and flea beetle sites were established in the MU by the U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS) for biocontrol of the leafy spurge.

Fish and Wildlife. White-tailed deer, red fox, mink, raccoon, cottontail rabbits, and several species of rodents use the MU. Game birds such as pheasants, grouse, and partridges are year-round residents. The MU and Garrison Bay are major staging areas for waterfowl during spring and fall migrations. Waterfowl and songbirds use the MU for nesting and rearing young. A local volunteer has placed and maintained several bluebird boxes, wood duck boxes, and goose nesting tubs in the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The area has occasional shoreline fishing use. Jet skiers use Garrison Bay as a slalom course. The area encompassing the site of the former strip mine has received extensive off road vehicle (ORV) use.

Other Important Past Management Activities. This wildlife area includes the old Stevens Brothers Coal Mine, which operated from 1922 to 1943. Three storage sheds and a concrete foundation constructed by the mining company are located in the MU. Fences were installed in 1991 and 1992 to control ORV use. In 1992 a boundary fence was cooperatively erected on the west side of the MU by the adjacent landowner to prevent livestock from grazing in the MU.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);

- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Install signage and/or fencing to control vehicular damage to vegetation;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

### **7.35. LAKESHORE NEAR GARRISON CREEK COTTAGE SITE    MANAGEMENT UNIT (MU): 038**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Garrison Creek Cottage Site is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the SW 1/4 of the SW 1/4 of Section 30 and the W 1/2 of the NW 1/4 of Section 31, T148N, R84W, in McLean County, North Dakota (ND). The MU is located on the southwestern shore of Garrison Bay, Lake Sakakawea approximately 2 miles west and 3 miles south of Garrison, ND. The area is accessed by 3 miles of graveled county road from ND Highway 37. The MU contains approximately 18.18 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of rolling to steep upland areas. The northern half of this MU consists of the Zahl-Cabba loams (15 to 35 percent slopes). The southern half is primarily Zahl-Max loams (9 to 35 percent slopes). There has been some shoreline erosion in the MU.

Vegetation. Vegetation in the area includes native and non-native short- to mid-grass prairie species, and native shrubs and trees. Predominant trees in the area include cottonwood, Russian olive, and green ash.

Fish and Wildlife. This MU is used by red fox, cottontail rabbits, skunks, badgers, raccoons, beavers, and many rodent species. Various waterfowl, upland game birds, shorebirds, and songbirds can be found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Garrison Creek Cottage Site, with occasional shoreline fishing. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The Corps has issued some Regulatory permits to private lot owners to rip-rap the shoreline with rock to protect their lots from erosion, but as of 2007, some erosion problems still existed.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote soil conservation, water quality, and public safety by facilitating control of shoreline erosion where problems exist;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Facilitate control of shoreline erosion where problems exist;
- Control noxious weeds.

### **7.36. GARRISON BAY VEGETATIVE MANAGEMENT UNIT (MU)**

**MU: 039**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Garrison Bay Vegetative Management Unit is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map in the E½ of the E½ of Section 34 and the S½ of the NW¼ of Section 35, T148N, R85W, in McLean County, North Dakota (ND). This MU is located 3 miles southwest of Garrison, ND between the Garrison Creek Cottage Site and the Garrison Cabin Cottage Site. It is accessed by 2.5 miles of graveled county road from ND Highway 37. The MU contains approximately 438.99 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Garrison Bay Vegetative Management Unit consists of rolling hills with moderate to severe slopes, with five major draws leading to the lakeshore. The soils in this MU are from the Williams-Bobwells association and consist mainly of Williams-Bobwells loam and Zahl-Max loam. Regent silty clay and Zahl-Cabba complex are also found in the lower parts of the draws. The shoreline of the MU contains several examples of petrified Dawn Redwood; one specimen is more than 90 feet long. The shoreline of the MU has suffered from erosion, with 19 acres having been eroded to bare ground.

Vegetation. The MU consists mainly of mixed prairie grasses. This plant community covers 90 percent of the MU. Vegetation includes native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. There are 15 acres of woody draws containing a mixture of prairie grasses, low shrubs, trees, and riparian vegetation. There is an infestation of leafy spurge in the eastern quarter of the MU that is being contained by the grazing lessee.

Fish and Wildlife. The area is used by white-tailed deer, coyote, raccoon, cottontail rabbits, ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl as a nesting, brood raising, and staging site. Occasionally a raptor is seen hunting in the MU.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. This vegetative management unit is used for upland game hunting in the fall. During the remainder of the year, recreational activities consist of shore fishing and sightseeing. Although most of the perimeter of the MU is fenced, the MU does get some off-road vehicle (ORV) use, primarily from neighboring cottage sites.

Other Important Past Management Activities. The MU is leased for livestock grazing and currently is divided between two leases. In 1989, one of the riparian draws was fenced off to prevent further damage from livestock grazing.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;

- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

### **7.37. LAKESHORE NEAR HIDEAWAY POINT COTTAGE SITE**

**MANAGEMENT UNIT: 040**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Hideaway Point Cottage Site is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the S 1/2 of the NE 1/4 of Section 34, T148N, R85W, in McLean County, North Dakota (ND). The MU is located on the northern shore of Lake Sakakawea approximately 10 miles southwest of Garrison, ND. The area is accessed by 3 miles of graveled county road from ND Highway 37. The MU contains approximately 27.97 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of rolling hills. The dominant soil type in the area is Williams-Bowbells loam (3 to 6 percent slopes). These soils are well drained and are only slightly susceptible to erosion.

Vegetation. Vegetation in the area includes native and non-native short to mid-grass prairie species, and native shrubs and trees. Predominant trees in the area include cottonwood, Siberian elm, Russian olive, and green ash.

Fish and Wildlife. This MU is used by white-tailed deer, red fox, cottontail rabbits, skunks, badgers, raccoons, beavers and many small rodents. Various waterfowl, upland game birds, shorebirds, and songbirds found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating, shoreline fishing, hiking, and sightseeing are the primary recreational activities at the lakeshore area near Hideaway Point Cottage Site. Limited hunting of upland game birds and waterfowl also occurs at this MU. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. This cottage area was formerly named the Garrison Cabin Site. It was one of the original recreation areas developed by the Corps. The lots were owned in fee by the Corps and leased for development of private cottages. In 1995, the cottage site was resurveyed by the Corps for sale to the general public and renamed Hideaway Point. All the lots have been sold and are in private ownership.

**Cultural Resources.** Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

**Development Needs.** Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

### **7.38. GARRISON CABIN WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 041**

**Land Classification.** Multiple Resource Management: Wildlife Management General

**Managing Agency.** U.S. Army Corps of Engineers (Corps)

**Location.** The Garrison Cabin Wildlife Area (WA) is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map in the S ½ of the S ½ of Section 27, and the N ½ of the N ½ of Section 34, T148N, R85W, in McLean County, North Dakota (ND). The MU is located 4 miles southwest of Garrison, ND. It lies just to the northwest of the Garrison Cabin Cottage Site and to the west of the Garrison Bay Vegetative MU. The MU is traversed by a graveled county road that provides access to the Garrison Cabin Cottage Site. The MU contains approximately 26.88 acres of project lands calculated in ArcView GIS without

regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of moderately sloped uplands leading down to the lakeshore. The soils in this MU are from the Williams-Bowbells association and consist primarily of Arnegard loams. There is an erosion problem along the shoreline.

Vegetation. The MU consists mainly of mixed prairie grassland. Vegetation includes native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. There are 6 acres of planted trees in the middle of the MU, one small stand of native trees, and several patches of native shrubs scattered throughout the MU. There is a leafy spurge problem in the southern part of the MU.

Fish and Wildlife. The MU is used occasionally by white-tailed deer, coyote, raccoon, cottontail rabbits, ring-necked pheasant, Hungarian partridge, and grouse. It is used year-round by several species of rodents and is also a nesting and rearing area for songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl as a nesting, brood raising, and staging site. An occasional raptor will be sighted hunting in the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the MU include upland game bird hunting, shore fishing, hiking, and bird watching. Many cabin owners from the Garrison Cabin Cottage Site recreate in the MU. There has been some off-road vehicle (ORV) use from the adjacent cottage site, but it has not been a major problem.

Other Important Past Management Activities. The low density recreation area adjacent to the Garrison Cabin Cottage Site acts as a buffer between the cottage site and the WA. Approximately 25 acres of grasslands in the northern and western portions of the WA are leased for grazing to the adjacent private landowner. Portions of the WA have been made available for haying on an annual basis.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;



- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

### **7.39. LAKESHORE NEAR HIDDEN BAY CABIN SITE**

**MANAGEMENT UNIT (MU): 042**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Hidden Bay Cabin Site is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the E 1/2 of the NW 1/4 of Section 34, T148N, R85W, in McLean County, North Dakota (ND). This MU is

located on the northern shore of Lake Sakakawea approximately 15 miles southwest of Garrison, ND. The area is accessed by 3 miles of graveled county road from ND Highway 37. The MU contains approximately 19.64 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU ranges from rolling to steep upland areas. The dominant soil type is Zahl-Max loam (9 to 35 percent slopes).

Vegetation. Vegetation in the area includes native and non-native short- to mid-grass prairie species, and native shrubs and trees. Predominant trees in the area include cottonwood, Siberian elm, Russian olive, and green ash.

Fish and Wildlife. This MU is used by red fox, cottontail rabbits, skunks, badgers, raccoons, beavers, and many rodent species. Various waterfowl, shorebirds, songbirds, and upland game birds can also be found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Off-shore fishing, boating, hiking, and sightseeing are the primary activities at the lakeshore area near Hidden Bay Cabin Site. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The Hidden Bay Cabin Site Association has a public road license. The Hidden Bay Cabin Site was formerly known as the Reuter Subdivision.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.40. HIDDEN BAY SOUTH VEGETATIVE MANAGEMENT UNIT                      MANAGEMENT UNIT: 043**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Hidden Bay South Vegetative Management Unit is shown on Sheet 4 (of 22) in Appendix A. It is located on the Garrison Dam North and Emmet SE USGS topographic maps in the E½ of the E½ and SW¼ of Section 34, T148N, R85W; and in the N½ of the NW¼ of Section 3, T147N, R85W, in McLean County, North Dakota (ND). This MU is located 4 miles west and 3.5 miles south of Garrison, ND between the Hidden Bay Cabin Site and the Krueger Subdivision. It is accessed by a 3.5-mile-long graveled county road from ND Highway 37. The MU contains approximately 69.95 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Hidden Bay South Vegetative MU consists of moderately sloped rolling hills, with several minor draws leading to the lakeshore. The slopes in the draws range from slight to moderate. The soils in this MU are from the Williams-Bobwells association and consist mainly of Williams-Bowbells loam and Zahl-Max loam.

Vegetation. The MU consists mainly of mixed prairie grasses with some low shrubs and scattered trees located in the draws. There are tree plantings in the western third of the MU, but they have had little success with very few trees surviving. A hay field is located along the western border in the northern part of the MU. There are several pockets of leafy spurge located throughout the MU. About 7 percent of the MU has been reduced to bare ground due to shoreline erosion. Noxious weeds include Canada thistle and leafy spurge. Biocontrol sites for both leafy spurge and Canada thistle are located in this MU.

Fish and Wildlife. The area is used year-round by white-tailed deer, red fox, mink, raccoon, cottontail rabbits, turkey, beaver, ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl and shorebirds as a nesting, brood raising, and staging site. The piping plover, a threatened species, was observed nesting and with young during the 1992 endangered species survey. An occasional raptor will be sighted hunting in the MU.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in this vegetative management unit include shore fishing, swimming, camping, upland game hunting, and off-road vehicle (ORV) use. The MU is heavily used for recreation in the summer time due to the ease of access via a county road. A parking lot and walk-in gate were constructed adjacent to the county road to give the public a walking access to the shoreline.

Other Important Past Management Activities. The west edge of the northern part of the MU has been leased for haying. A boundary fence was constructed in 1993 along the north boundary to resolve an agricultural encroachment.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to identify the Corps project boundary and reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;

- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.41. LAKESHORE NEAR KRUEGER SUBDIVISION**

**MANAGEMENT UNIT (MU): 044**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Krueger Subdivision is shown on Sheet 4 (of 22) in Appendix A. It is located on the Emmet Southeast USGS topographic map, in the S 1/2 of the SE 1/4 of Section 33, T148N, R85W, in McLean County, North Dakota (ND). This MU is located on the northern shore of Lake Sakakawea approximately 6 miles southwest of Garrison, ND. The area is accessed by 3 miles of graveled county road from ND Highway 37. The MU contains approximately 16.28 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of undulating and gently sloping glacial till uplands. The dominant soil type is Williams-Bowbells loam (3 to 6 percent slopes).

Vegetation. Vegetation in the area includes native and non-native short to mid-height grass species, and native shrubs and trees. Predominant trees in the area include cottonwood, Siberian elm, Russian olive, and green ash. Noxious weeds include sporadic patches of leafy spurge.

Fish and Wildlife. The MU is used by red fox, cottontail rabbits, skunks, badgers, raccoons, beavers, and many rodent species. Various waterfowl, shorebirds, upland game birds, and songbirds can be found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Off-shore fishing is the primary recreational activity at the lakeshore area near Krueger Subdivision. Recreational use also includes boating and some shoreline fishing. A primitive public boat ramp is located here that is used extensively by lot owners in the Krueger Subdivision, residents in the nearby Hidden Bay Cabin Site, and the general public. A beach is located in the southeast portion of the MU and has a pedestrian access through a fence bordering a parking lot at the end of a dirt road. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for access to Lake Sakakawea at normal pool elevations;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.42. SCHLICHTING VEGETATIVE AREA**

**MANAGEMENT UNIT (MU): 045**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Schlichting Vegetative Area (VA) is shown on Sheets 4 and 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic maps in portions of Sections 32 and 33, T148N, R85W; and portions of Sections 4 and 5, T147N, R85W, in McLean County, North Dakota (ND). The MU is located on the north shore of Lake Sakakawea just east of Douglas Creek Bay. It is accessed by traveling 3 to 4 miles west from the city of Garrison, ND on ND Highway 37 and then south for approximately 3 miles on graveled county road. The graveled county road leads to a two-track road from either the Krueger or Schlichting Subdivisions. The MU contains approximately 220.83 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

**Topography and Soils.** The topography in the MU consists of nearly level to gently rolling agricultural lands. Williams-Bowbells loams (1 to 9 percent slopes) are the major soils on the uplands. These soils are well drained and are excellent for crops, prairie, and pasture. The areas near the shoreline and in the woody draws are predominantly Zahl-Max loams (9 to 35 percent slopes). This soil type is well drained and is highly susceptible to erosion.

**Vegetation.** Vegetation in the area consists mainly of native to non-native short- to mid-grass species. Approximately 134 acres of the MU consists of rangeland. Two large mitigation plantings provide the majority of the woody vegetation here. Woody vegetation consists of Russian olive, green ash, chokecherry, Rocky Mountain juniper, buffaloberry, American plum, and bur oak. Rose shrubs are also found in the MU. Noxious weeds include Canada thistle and leafy spurge.

**Fish and Wildlife.** The area is used by red fox, cottontail rabbits, skunk, badger, raccoon, beaver, and many rodent species. Avian species include upland game birds, waterfowl, shorebirds, and songbirds.

**Visitation.** The Corps does not record visitation for this vegetative management area.

**Recreation.** Recreational activities in the Schlichting VA mainly include big game and upland game hunting. The area has easy gravel road access and is becoming a popular outlying fishing and picnicking location, despite restrictions on these activities due to use of the MU for grazing. Off-road vehicle (ORV) traffic occurs north of the largest mitigation planting.

**Other Important Past Management Activities.** About 140 acres of the MU is leased for agricultural, haying, and grazing purposes. Two irrigation lines are used by the two lessees for adjacent agricultural lands. Rental abatements have included food plots and fencing. In 1991, Mr. Richard Schlichting developed a cottage site on land he owned adjacent to this MU. The Corps withdrew from the Schlichting VA the parcel of land between this subdivision and Lake Sakakawea and created a separate MU with a land classification of Multiple Resource Management: Recreation – Low Density.

**Cultural Resources.** Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;

- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.43. LAKESHORE NEAR SCHLICHTING CABIN SITE**

**MANAGEMENT UNIT (MU): 046**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Schlichting Cabin Site is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmett SE USGS topographic map, in the E 1/2 of Section 32, T148N, R85W, in McLean County, North Dakota (ND). The MU is located approximately 7 miles southwest of Garrison, ND. It is accessed by a graveled county road 4 miles long from ND Highway 37. The MU contains approximately 26.11 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently to moderately rolling slopes. The dominant soil types include Williams-Bowbells loams (3 to 6 percent slopes), Zahl-Williams slopes (3 to 9 percent slopes), and Max-Zahl loams (9 to 15 percent slopes). All are well drained soils with medium to rapid runoff. Williams-Bowbells loams are slightly susceptible to erosion, Zahl-Williams loams are highly susceptible to erosion, and Max-Zahl loams have a severe erosion hazard. Some shoreline erosion exists in the MU.

Vegetation. Vegetation in the area includes native and non-native short to mid-height grass species, and native shrubs and trees. Predominant trees in the area include cottonwood, Siberian elm, Russian olive, and green ash. Noxious weeds include sporadic patches of leafy spurge.



Fish and Wildlife. The MU is used by red fox, cottontail rabbits, skunks, badgers, raccoons, beavers, and many rodent species. Various waterfowl, shorebirds, upland game birds, and songbirds can be found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Off-shore fishing is the primary recreational activity at the lakeshore area near Schlichting Cabin Site. Recreational use also includes boating and some shoreline fishing. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;

- Facilitate control of shoreline erosion where problems exist;
- Control noxious weeds.

#### **7.44. CAMP OF THE CROSS (LUTHERAN BIBLE CAMP)**

**MANAGEMENT UNIT (MU): 047**

Land Classification. Recreation

Managing Agency. Camp of the Cross Ministries

Location. Camp of the Cross (formerly Lutheran Bible Camp) is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map, in the SE ½ of Section 31 and SW ½ of Section 32, T148N, R85W, and NW ¼ of Section 6 and NW ¼ of Section 5, T147N, R85W, in McLean County, North Dakota (ND). The MU is located on the southeast shore of Douglas Creek Bay, east of and located on the same peninsula as the Triangle YMCA Camp. The MU contains approximately 117.37 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). Access is by approximately 6 miles of gravel roads leading south from ND Highway 37.

Topography and Soils. Soils at this MU consist of approximately 50 percent Williams-Bowbells loams and 50 percent Zahl-Max loams. The Williams-Bowbells loams (3 to 6 percent slopes) are located in the camp area itself on well drained, gently sloping hills. The Zahl-Max loams (9 to 35 percent slopes) are located on and following the shoreline of Lake Sakakawea surrounding the MU.

Vegetation. Vegetation consists of mowed introduced grasses within the vicinity of the camp buildings, with alfalfa in the fields to the west. The ridgetops support mainly uncut native prairie grasses, crested wheatgrass, and buckbrush. Deciduous trees, buffaloberry, silverberry, and poison ivy are found in the shoreline drainages. Both deciduous and coniferous tree plantings, most in the form of two- to six-row shelterbelts, are found throughout the central portion of the MU.

Fish and Wildlife. The area is used by white-tailed deer, red fox, mink, raccoon, cottontail rabbit, and several species of rodents. The area is frequented by shorebirds, upland game birds, waterfowl, raptors, and songbirds. No threatened or endangered species are known to inhabit the MU.

Visitation. The U.S. Army Corps of Engineers does not record visitation for this MU.

Recreation. This area is used for group camping by the Camp of the Cross Ministries and affiliated groups. Swimming, fishing, sports, hiking, and camping activities are enjoyed. Facilities at the MU include a boat ramp, parking lot, restroom/bathroom facilities, a lodge/dining hall, a primitive campground, a waterslide pool, and a swimming beach. The general public has access to a second ramp, made of concrete planking and functional during low lake elevations, that was installed by the ND Game and Fish Department near the swim beach in the late 1980s or early 1990s.

Other Important Past Management Activities. The Lutheran Bible Camp Association was the original lessee and changed their name to Camp of the Cross Ministries in the late 1980s. Consequently, the name of the camp was also changed.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Build 2 log cabins;
- Construct a screened campfire shelter;
- Construct a fire pit in the campground;
- Add additional RV hookups at the campground;
- Construct a multi-purpose building for summer activities and winter storage;
- Replace the lodge/dining hall;
- Upgrade the waterslide pool;
- Install a memorial fountain;
- Improve the boat ramp;
- Remove the old office building and complete a new office building;
- Plant one row of evergreen trees;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## 7.45. TRIANGLE YMCA CAMP

MANAGEMENT UNIT (MU): 048

Land Classification. Recreation

Managing Agency. Minot YMCA

Location. The Triangle YMCA Camp is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE topographic map, in the SE 1/4 of Section 31, T148N, R85W, in McLean County, North Dakota (ND). The MU is located on the southeast shore of Douglas Creek Bay. It is located east and southeast of the ND National Guard's Douglas Creek Weekend Training Site and contains approximately 274.41 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by 5 miles of gravel county roads leading south from ND Highway 37.

Topography and Soils. The area is characterized by uplands that drop down to the shoreline. Depressions, stones, and boulders are common in this area. The Triangle YMCA Camp consists of Zahl-Max association soils, which are deep, hilly and steep, well drained, and medium-textured on glacial till uplands.

Vegetation. Approximately 85 percent of the MU consists of grasslands, which include native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Trees are found in woody draws and scattered tree plantings, and non-vegetated bare ground is found along the shoreline. Noxious weeds are a problem and are controlled by the YMCA under contract. The YMCA also expressed an interest in the Centennial Tree Program.

Fish and Wildlife. The MU is used by white-tailed deer, red fox, mink, raccoon, cottontail rabbit, and several species of rodents. The area is also frequented by shorebirds, upland game birds, waterfowl, raptors, and songbirds. Piping plovers have nested on the shoreline in the western part of this MU.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this MU.

Recreation. The Triangle YMCA Camp is used for group camping by the YMCA and affiliated agencies. Horseback riding, swimming, fishing, sports, hiking, and other camping activities are enjoyed. Facilities include a dining hall, health lodge, ranch house, arts and crafts building, staff housing, shower houses, chapel, a pole barn in which machinery is stored, tack shed, riding arena, and a number of cabins.

Other Important Past Management Activities. The Corps developed a grazing plan for the YMCA, which the YMCA follows in grazing their horses.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide updated, safe facilities and infrastructure for group camping activities;

- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation and interpretation, bird watching, horseback riding, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Build a boat ramp;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Place rip-rap west of the health lodge and west of the north cabins to control erosion;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Develop a visitors' parking lot;
- Develop road to the north pasture;
- Develop recreational vehicle (RV) parking sites and install RV hookups;
- Lengthen the rail fence on the north side of camp;
- Develop a point of interest trail;
- Build a 40' x 80' multi-purpose activity center and landscape it;
- Add year round retreat cabins;
- Install an outdoor swimming pool and water slide;
- Add an environmental nature center;
- Build a pole barn shelter at the corral;
- Pour a concrete floor in the pole barn and add on a woodworking classroom;
- Add bathroom and kitchen addition and cold storage to the multi-purpose building;
- Add on to the tack shed;
- Renovate shower houses and dining hall bathrooms;
- Renovate the arts and crafts building, machinery pole barn, north cabins, and south cabins;
- Add drain fields to shower house(s), dining hall, health lodge, ranch house and staff housing;
- Add a furnace to the dining hall;
- Add new chapel benches and develop the area;
- Develop baseball infield and outfield;
- Install irrigation at the baseball field and by the dining hall and south cabins;
- Add street lamps outside the south cabins and staff housing area for security;
- Add a high ropes climbing course or Carolina Climbing Wall;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.46. YMCA NORTH VEGETATIVE MANAGEMENT UNIT (MU)**

**MU: 049**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The YMCA North Vegetative Management Unit is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in the E½ of the SW¼ of Section 20, T148N, 85W; and the E½ of the NE¼ of Section 30, T147N, R85W, in McLean County, North Dakota (ND). The MU is located next to Douglas Creek Bay along the eastern shore of the eastern fork of the bay. It lies to the north of the YMCA camp in two sections. The southern section adjoins the Triangle YMCA Camp. The northern section is located to the northeast of the YMCA Camp and is surrounded by flowage easements to the north and south, and by private property to the east. The west end of the south section adjoins the YMCA Camp. There is no vehicle access to the MU, but the MU is accessible from the YMCA Camp by four-wheel drive vehicles. The MU contains approximately 34.72 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of moderately sloped hills with several minor draws leading to the lakeshore. The slopes in the draws range from slight to moderate. The soils in this MU are from the Zahl-Cabba association and consist mainly of Regent silt clay loams and Arnegard loams.

Vegetation. Vegetation in the area consists mainly of mixed prairie grasses. Some low shrubs and scattered trees are located in the draws.

Fish and Wildlife. The area is used year-round by white-tailed deer, coyote, red fox, mink, raccoon, cottontail rabbits, ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl and shorebirds as a nesting, brood raising, and staging site. An occasional raptor will be sighted hunting in the MU.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in this vegetative management unit are limited due to a lack of vehicle access to the MU. Activities include minimal hunting, shore fishing, and primitive camping.

Other Important Past Management Activities. The MU was designated for low-density recreation in the 1978 Master Plan. The MU has not been outgranted by the Corps because of the difficulty of vehicular access.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.47. DOUGLAS CREEK WEEKEND TRAINING SITE**

#### **MANAGEMENT UNIT (MU): 051**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. North Dakota National Guard

Location. The Douglas Creek Weekend Training Site is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map, in Sections 25, 30, and 36, T148N, R85W and R86W, in McLean County, North Dakota (ND). The MU encompasses the peninsula north of the Douglas Creek Recreation Area and is the largest peninsula in Douglas Creek Bay. Access is from Highway 37, by a 2-lane gravel road 4 miles long. There is a gravel circulation road in the MU. The MU contains approximately 682.74 acres of project lands calculated in

ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Douglas Creek Weekend Training Site consists of uplands that drop down to the shoreline. Depressions, stones, and boulders are common. Soil types in the area include the Zahl-Max association soils with deep, hilly and steep, well drained, medium textured soils of glacial till uplands.

Vegetation. The MU contains around 540 acres of grassland that includes native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. The area contains 81 acres of scattered block and row tree plantings and 29 acres of woody draws.

Fish and Wildlife. The area is home to white-tailed deer, red fox, mink, raccoon, and cottontail rabbit. The area also has several species of rodents. Avian wildlife includes upland game birds, shorebirds, waterfowl, songbirds, and raptors. Piping plovers have nested along the southeastern shoreline of the MU.

Visitation. The U.S. Army Corps of Engineers does not record visitation for this MU.

Recreation. This MU is managed mainly for training of the North Dakota National Guard and affiliated agencies. The area also has two camping pads with electrical hook-ups and a poured concrete boat ramp. The public can fish and hunt at this MU during periods when the ND National Guard is not conducting training activities. Facilities include a boat ramp, sleeping quarters, vault toilets, a latrine building, a training building, and a storage building.

Other Important Past Management Activities. The MU has suffered from extensive off-road vehicle activity. The southern part of the MU was the site of a controlled burn in 1994 to improve the quality of the vegetative cover.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide an area adequate for ND National Guard training activities consistent with conservation of natural resources;
- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;



- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Repair the boat ramp;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Replace the training building;
- Construct a metal building on the building 102 slab;
- Construct a 16' x 32' concrete slab with RV post;
- Upgrade the RV pads and electrical system;
- Upgrade the latrine building;
- Restore areas where soil has been disturbed by training activities, using fill, grading, and seeding;
- Remove excess construction material located east of the buildings;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.48. LAKESHORE NEAR SPRING CREEK SUBDIVISION**

**MANAGEMENT UNIT (MU): 052**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Spring Creek Subdivision is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map, in the S 1/2 of the NE1/4 of Section 26, T148N, R86W, in McLean County, North Dakota (ND). The MU is located on the northern shore of Douglas Bay, approximately 12 miles west of Garrison, ND. The area is accessed by 3 miles of graveled county road from ND Highway 37. The MU contains approximately 35.12 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this area consists of upland areas with rolling to steep hillsides and woody draws. The dominant soil type is Zahl-Max loams (9 to 35 percent slopes). These soils are well drained.

Vegetation. Vegetation in the area consists primarily of native and non-native short to mid-height grass species. Native shrubs and trees consisting of cottonwood, Russian olive, and green ash grow on the steeper ridges and in the woody draws.

Fish and Wildlife. This MU is used by red fox, cottontail rabbits, skunks, badgers, raccoons, beavers, and many rodent species. Various waterfowl, upland game birds, shorebirds, and songbirds can be found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating and shore fishing are the major recreational activities at the lakeshore area near Spring Creek Subdivision. There is a public boat ramp in this MU that is maintained by the Spring Creek Subdivision residents. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.49. IGLEHART WILDLIFE AREA**

#### **MANAGEMENT UNIT (MU): 053**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Iglehart Wildlife Area (WA) is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in the S ½ of Section 26, T148N, R86W, in McLean County, North Dakota (ND). The MU is located on the east shore of a peninsula on the northern shore of Douglas Creek Bay between the Iglehart Deluxe Subdivision and the Iglehart Subdivision. The MU is accessed by a graveled road that traverses the northwest portion of the MU to provide access to the Iglehart Subdivision. The MU contains approximately 27.01 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of moderately to severely sloped uplands dissected by several coulees leading to the lakeshore. The soils in this MU consist mainly of Williams-Bowbells loam and Zahl-Max loam.

Vegetation. The upland area of the MU consists primarily of grassland. Vegetation includes native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. The woody draws contain green ash, box elder, cottonwood, and a variety of shrubs. A portion of the northern part of the MU has been planted to crops to serve as a wildlife food plot and is maintained by a resident of the Iglehart Subdivision.

Fish and Wildlife. The MU is used intermittently by white-tailed deer, red fox, mink, raccoon, and cottontail rabbits. It is a year-round home for ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl and shorebirds as a nesting, brood raising, and staging site. An occasional raptor will be sighted hunting in the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Other than occasional pedestrian and off-road vehicle (ORV) use and some hunting, the MU does not see much recreational activity.

Other Important Past Management Activities. The graveled road that crosses the MU is maintained by McLean County, which obtained an easement from the Corps for the road. During low water conditions when boat docks in the lakeshore area adjacent to the Iglehart Subdivision are nonfunctional, the southern shoreline of the Iglehart WA is used for boat mooring.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;

- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Provide opportunities for hunting;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## 7.50. LAKESHORE NEAR IGLEHART SUBDIVISION

## MANAGEMENT UNIT (MU): 054

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Iglehart Subdivision is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map, in the S 1/2 of the SW 1/4 of Section 26, T148N, R86W, in McLean County, North Dakota (ND). This MU is located on the northern shore of Douglas Bay, 12 miles west of Garrison, ND. The area is accessed by 3.5 miles of graveled county road south from ND Highway 37. The MU contains approximately 39.52 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU is well drained, has medium run-off, and is only slightly susceptible to erosion. The dominant soil type is Williams-Bowbells loam (3 to 6 percent slopes). The far eastern and western ends of the MU have small areas of Zahl-Max loam (9 to 35 percent slopes). Near the eastern end of the MU is a drainage area that consists of Max-Zahl loam (6 to 9 percent slopes).

Vegetation. Vegetation in the area includes native and non-native short- to mid-grass prairie species, and native shrubs and trees. Predominant trees within the small drainage area in the eastern MU include cottonwood, Russian olive, and green ash. A small apple orchard has also been planted in the MU.

Fish and Wildlife. This MU is used by red fox, cottontail rabbits, skunks, badgers, raccoons, beavers, and many rodent species. Various waterfowl, upland game birds, shorebirds, and songbirds can also be found in this MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating and shoreline fishing are the major recreational activities at the lakeshore area near Iglehart Subdivision. A two-track dirt road forming the eastern boundary of the limited development area (where boat docks are allowed) is used extensively for boating access. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;

- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.51. DOUGLAS CREEK WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 055**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Douglas Creek Wildlife Area (WA) is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in the S 1/2 of Section 1, S 1/2 of Section 2, S 1/2 of Section 11, and Section 12, T147N, R86W, McLean County, North Dakota (ND). It is located on the western shore of Douglas Creek Bay and is accessed by traveling 13 miles west of Garrison on ND Highway 37 and 8 miles south of Emmet by gravel road. The WA contains approximately 503.33 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of the WA is conducive to nearly level to gently rolling agricultural lands. The soil types are mainly Williams-Bowbell loams (1 to 9 percent slopes). These soils are well drained and are excellent for crops, prairie and pasture.

Vegetation. The most common grass found in the WA is crested wheatgrass; the soils also support western wheatgrass, needle and thread, green needlegrass, prairie junegrass, blue grama, Penn sedge, and little bluestem. Shelterbelts and two large mitigation plantings consisting of Russian olive, green ash, Rocky Mountain juniper, and chokecherry are interspersed among the

grasses. Recent plantings have also introduced buffaloberry, American plum, bur oak, golden willow, and rose to the hardwood species inventory.

Fish and Wildlife. White-tailed deer, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many rodent species inhabit this area. Avian species include upland game birds, waterfowl, shorebirds and songbirds. The endangered least tern and threatened piping plover have nested on islands off of the peninsula. No other threatened or endangered species inhabit this WA.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The main recreational uses of the WA are hunting of big game, upland game, and furbearers; trapping; horseback riding; hiking; and sightseeing. Shoreline fishing occurs but is minimal due to restrictions on off-road vehicle (ORV) use.

Other Important Past Management Activities. The northern part of this WA was part of the Douglas Creek Recreation Area until the early 1990s. It was unofficially reclassified for wildlife management because of limited recreation facility development and the increase in tree plantings, food plots, and management for dense nesting cover and wetlands habitat. A wildlife management plan was developed for this area in 1994. The Sakakawea Chapter of Pheasants Forever, Inc. has partnered with the Corps in cooperative management of this WA. Pheasants Forever maintains dense nesting cover, food plots, and tree plantings; the Corps focuses on wetlands development, prairie restoration, and plans for an equestrian and hiking trail. A 39.42-acre area that was previously part of this WA and is adjacent to the Douglas Creek Recreation Area was reclassified for low-density recreation as part of the process of updating the Master Plan, to allow for expansion of primitive camping and the potential development of trail facilities while providing a buffer between the Douglas Creek Recreation Area and the Wildlife Area.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;

- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and trail facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and horseback riding;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.52. DOUGLAS CREEK LOW-DENSITY RECREATION AREA    MANAGEMENT UNIT (MU): 056**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Douglas Creek Low-Density Recreation Area is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in the S 1/2 of Section 1, T147N, R86W, in McLean County, North Dakota (ND). The MU is located on the western shore of Douglas Creek Bay, approximately 17 miles southwest of Garrison, ND. It is accessed by traveling 13 miles west of Garrison on ND Highway 37 and 8 miles south of Emmet by gravel road. The MU contains approximately 39.42 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).



Topography and Soils. The topography in the Douglas Creek Low-Density Recreation Area consists of gently rolling slopes. Soil types in this MU include Williams-Bowbells loams (1 to 3 percent slopes) and Williams-Bowbells loams (3 to 6 percent slopes). Both are well drained and are slightly susceptible to erosion.

Vegetation. The most common grass found in the area is crested wheatgrass; however, the soil types will support western wheatgrass, needle and thread, green needlegrass, prairie junegrass, blue grama, Penn sedge, and little bluestem. Several four-row shelterbelts transect the MU. Cottonwoods are found along the shoreline.

Fish and Wildlife. White-tailed deer, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many rodent species inhabit this area. Avian species include upland game birds, waterfowl, shorebirds, and songbirds.

Visitation. The Corps does not record visitation for this area.

Recreation. This area offers opportunities for primitive camping and day use, but no facilities. Major day use activities include hunting, some shoreline fishing, hiking, wildlife observation, and bird watching. This MU is adjacent to the Douglas Creek Recreation Area and provides an area suitable for development of additional recreation facilities based on public needs.

Other Important Past Management Activities. The 1978 Master Plan designated the northern part of this area for low-density recreation and the southern part of this area for intensive-use recreation, but no facility development occurred. The Corps unofficially reclassified this area for wildlife management and included it in the Douglas Creek Wildlife Area. Pheasants Forever partnered with the Corps in improving the wildlife habitat in this area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and primitive camping;
- Provide separation of day use and primitive camping areas;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide for adequate road access and parking areas;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Develop a circulation road and parking area;
- Develop a trailhead for an equestrian and/or hiking trail that would extend into the adjacent Douglas Creek Wildlife Area, if appropriate;
- Install at least one vault toilet that meets Americans with Disabilities Act standards;
- Use signage to delineate a primitive camping area separated from day use areas;
- Install picnic facilities for use by families and groups;
- Provide separation between day use and primitive camping areas;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Establish additional tree cover for shade and screening between the primitive camping area and day use areas;
- Plant trees, shrubs, and native grasses for shade, wildlife food supply and habitat, and enhanced views;
- Control noxious weeds.

### **7.53. DOUGLAS CREEK RECREATION AREA**

**MANAGEMENT UNIT (MU): 057**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Douglas Creek Recreation Area is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in the SE1/4 of Section 1, T147N, R86W, in McLean County, North Dakota (ND). It is located on the western shore of Douglas Creek Bay. The MU contains approximately 49.15 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by traveling 13 miles west of Garrison on ND Highway 37 and 8 miles south of Emmet by gravel road.

Topography and Soils. The topography in the Douglas Creek Recreation Area consists of Williams-Bowbells loams with 3 to 6 percent slopes. The area is well drained and has medium runoff. The shoreline is highly susceptible to erosion from Lake Sakakawea.

Vegetation. The most common grass found in the area is crested wheatgrass; however, the soil types will support western wheatgrass, needle and thread, green needlegrass, prairie junegrass, blue grama, Kentucky bluegrass, Penn sedge, and little bluestem. There are two large conifer block plantings in the MU. Cottonwoods are found along the shoreline.

Fish and Wildlife. White-tailed deer, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many rodent species inhabit this area. Avian species include upland game birds, waterfowl, shorebirds, and songbirds.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	13,874	2001	13,617
1996	19,228	2002	15,717
1997	13,637	2003	15,330
1998	12,743	2004	13,112
1999	11,777	2005	16,542
2000	13,768	2006	59,734

Recreation. The Douglas Creek Recreation Area consists primarily of boat launching ramps and some primitive camping areas. There is one concrete launching ramp for high and normal lake levels capable of extension with concrete planks and also a low-water launching ramp. The two camp loops of the recreation area are graveled and have a total of 17 campsites, each with a picnic table and fire ring, but camping is not restricted to these sites. Four vault toilets are also located in the recreation area.

Other Important Past Management Activities. This MU has seen little development since the original concept of the area in the 1978 Master Plan. The 1996 Operational Management Plan indicated that the Douglas Creek Recreation Area should continue to be developed and maintained as a 25-unit boat ramp area with 20 designated primitive camping sites. Due to relatively low visitation, the recreation area was decreased in acreage from 637 acres to 49 acres in the early 1990s. The remainder became the Douglas Creek Wildlife Area to enable resource management practices to focus on wildlife management. In response to recent and projected future increases in visitation at the Douglas Creek Recreation Area, however, a low-density recreation area to support additional primitive camping is proposed for 39.42 of these wildlife management acres adjacent to the Douglas Creek Recreation Area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives of this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide facilities for family and group camping activities separated from day use areas;
- Provide lake access for fishing, boating, and other water-oriented activities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;

- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade the campground areas with modern amenities;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Replace the wood kiosks with recycled plastic kiosks;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Replace two existing vault toilets with a double vault toilet that meets Americans with Disabilities Act (ADA) standards;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.54. BERTHOLD BAY WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 058**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Berthold Bay Wildlife Area (WA) is shown on Sheets 5 and 6 (of 22) in Appendix A. It is located on the Emmet SW USGS topographic map, in the SE 1/4 of Section 12, T147N, R87W, and in Section 13, T147N, R87W, in McLean County, North Dakota (ND). The WA is located on the western side of Berthold Bay. It is accessed from County Road 9 by roads less than 1 mile long. The WA contains approximately 97.04 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Berthold Bay WA consists of moderately to steeply sloping uplands. Soil types in this MU include Cabba complex (15 to 35 percent slopes), Cabba-Shale outcrop complex (25 to 60 percent slopes), Zahl-Cabba complex (15 to 35 percent slopes), and Williams-Bowbells loams (6 to 9 percent slopes). All of these soil types are well drained.

Vegetation. The upland areas and slopes of the WA are primarily grasslands. Included in this plant community are native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Scattered about among the grasslands are small pockets of shrubs and trees. In the woody draws are green ash, box elder, cottonwood, and a variety of shrubs.

Fish and Wildlife. The WA is used by a variety of big and small game including pronghorn antelope, mule deer, white tailed deer, coyotes, red fox, mink, raccoon, and cottontail rabbit. It is a year round home for ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl and shorebirds as a nesting, brood raising, and staging site. Eagles, hawks, owls, and

vultures are also sighted in the WA. In 1994 a pair of endangered least terns nested on the shoreline of the bay just west of Elbowoods Bay. The inlets along the shore of Berthold Bay contain spawning grounds for several species of fish.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Hunting is the primary recreation activity in the WA. Boat fishing is popular in Berthold Bay.

Other Important Past Management Activities. The Berthold Bay WA was designated for wildlife management in the 1978 Master Plan. It was later informally reclassified for vegetative management, and approximately 41 acres of the WA is leased for livestock grazing under the Corps' grazing program.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;

- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

**7.55. VEGETATIVE MANAGEMENT AREAS WITHIN THE FORT BERTHOLD RESERVATION:**

<b>NISHU GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 059</b>
<b>DEEPWATER GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 064</b>
<b>POUCH POINT GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 069</b>
<b>TOBACCO GARDEN VEGETATIVE MU</b>	<b>MANAGEMENT UNIT (MU): 069</b>
<b>SANISH WEST GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 140</b>
<b>SKUNK CREEK GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 142</b>
<b>LITTLE MISSOURI NORTH GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 145</b>
<b>LITTLE MISSOURI SOUTH GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 150</b>
<b>LAKE SAKAKAWEA SOUTH GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 152</b>
<b>BEAVER CREEK BAY GRASSLANDS</b>	<b>MANAGEMENT UNIT (MU): 156</b>

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps) / Three Affiliated Tribes [potential transfer of these lands to Department of the Interior]

Location. All these vegetative management areas are located within the external boundaries of the Fort Berthold Indian Reservation. Approximate acres of project lands that are provided for each management unit were calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

The Nishu Grasslands area contains approximately 6,034.18 acres and lies along the north shore of the lake, from Berthold Bay on the east to about 4 miles south of Deepwater Creek Bay on the west, and is shown on Sheets 6, 7, 8, and 11 (of 22 sheets) in Appendix A.

The Deepwater Grasslands area contains approximately 1,069.62 acres and extends along the eastern shore of the lake, from the north shore of Deepwater Creek Bay north to about 4 miles north of Lucky Mound Creek Bay (see Sheets 11 and 12).

The Pouch Point Grasslands area (which includes a portion of the old Tobacco Garden Vegetative MU) contains approximately 2,978.64 acres and lies on the peninsula south of New Town; it extends from about 2 miles north of Pouch Point Bay to about 3 miles south of Reunion Bay (see Sheets 12 and 14).

The Sanish West Grasslands area contains approximately 2,455.29 acres and lies along the west shore, from Four Bears Bay on the north to the south shore of Bear Den Bay on the south (see Sheets 14 and 15).

The Skunk Creek Grasslands area contains approximately 5,392.03 acres and lies between the south shore of Bear Den Bay and the McKenzie Bay Recreation Area (RA) at the Little Missouri Arm confluence (see Sheets 8, 9, 11, 12, and 14).

The Little Missouri North Grasslands area contains approximately 4,416.60 acres and lies along the north shore of the Little Missouri Arm, from McKenzie Bay RA to the western boundary of the Fort Berthold Reservation (see Sheets 8, 9, and 10).

The Little Missouri South Grasslands area contains approximately 1,350.92 acres and lies along the south shore of the Little Missouri Arm, from the western shore of Wolf Chief Bay to Charging Eagle RA (see Sheet 9).

The Lake Sakakawea South Grasslands area contains approximately 3,789.54 acres and lies along the south shore of the lake, from Charging Eagle RA on the west to the west shore of Red Butte Bay on the east (see Sheets 7, 8, and 9).

The Beaver Creek Bay Grasslands area contains approximately 3,294.53 acres and lies along the south shore of the lake, from the southwest shore of Red Butte Bay on the west to about 2 miles east of Beaver Creek Bay on the east (see Sheets 6 and 7).

Vehicular access routes to these areas are BIA roads and section-line roads; in addition, they can often be accessed by roads from adjacent recreation areas. The adjacent recreation areas also provide boat access to these vegetative management areas.

Topography and Soils. Much of the topography in these areas consists of moderately to severely sloped uplands dissected by coulees leading to the lakeshore. These areas include many badlands areas, which contain coarse to moderately textured soils that formed in materials weathered from sandstone and/or siltstone or formed in alluvium. Soil associations in the badlands include Cabba-Badlands soils, which are shallow, medium textured, moderately sloping to very steep, and well drained; medium textured Cabba-Badlands-Cherry soils; medium to coarse textured Cabba-Cohagen soils; and moderately coarse textured Cohagen-Verbar soils.

In the Pouch Point Grasslands area, topography south and west of the Pouch Point RA is badlands but also contains soils of the Zahl-Williams association, which are deep, medium textured, gently rolling to hilly, and well drained. North and east of the Pouch Point RA is rolling prairie, with Cabba-Zahl-Shambo association soils that are shallow to deep, medium to moderately fine textured, moderately sloping to very steep, and well drained.

In the Little Missouri South Grasslands, the Wolf Chief Bay area is a wide, fairly level valley.

The area around Beaver Creek Bay consists of broad, gently sloped valleys and uplands and mainly Williams-Cabba association soils, which are well drained and formed from materials weathered from glacial till and soft bedrock.

Much of the Nishu Grasslands and Deepwater Grasslands areas have soils formed from glacial till that are in the Zahl-Max, Zahl-Cabba, and Williams-Bowbells associations.

Vegetation. Upland grasslands is the main plant community that dominates these vegetative management areas. These upland grassland areas primarily include native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Scattered about among the grasslands are small pockets of shrubs and trees. Green ash, box elder, cottonwood, and a variety of shrubs dominate in the woody draws. The Nishu Grasslands, Skunk Creek Grasslands, Little Missouri North Grasslands, and Lake Sakakawea South Grasslands areas also contain portions of badland plant communities. Vegetation in the coulees and protected slopes in the badlands areas

include junipers, green ash, and birch trees. Only the Little Missouri South Grasslands, with the exception of the Wolf Chief Bay area, is dominated by badlands terrain with sparse upland grasslands. The Wolf Chief Bay area contains only upland grasslands. There are several tree plantings in the Beaver Creek Bay Grasslands area, next to the extreme western part of Beaver Creek Bay.

Fish and Wildlife. These areas are used by a variety of big and small game including pronghorn antelope, mule deer, white-tailed deer, coyotes, red fox, mink, raccoon, and cottontail rabbit. Ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds are year-round residents. Raptors sighted hunting and foraging in these areas include golden eagles, hawks, owls, and vultures. Bison from a herd maintained by the Three Affiliated Tribes near Skunk Creek Bay occasionally use the Skunk Creek Grasslands area. The inlets along the shore are used in spring, summer, and fall by waterfowl and shorebirds as a nesting, brood raising, and staging site. Interior least terns and piping plovers have nested in many areas, especially lakebed areas that were exposed during times of drought and that contain little or no vegetation. Several of the inlets constitute spawning grounds for several species of fish.

Visitation. The Corps does not record visitation for these areas.

Recreation. Hunting (mainly big game hunting and upland bird hunting) is the primary recreation activity in these areas. Hiking, camping, and photography are also common recreational activities. Off-road vehicle (ORV) use also occurs, and as a result some prairie trails have developed. Boat fishing is popular in the inlets and the lake adjacent to these areas. In the Beaver Creek Bay Grasslands area, a low water ramp in Beaver Creek Bay is used when the boat ramp in the adjacent Beaver Creek Bay RA is unusable. The beaches at the Skunk Creek Grasslands area are used occasionally by picnickers and campers who arrive from the lake by boat. In March 2007 the Corps executed a 5-year license to the Three Affiliated Tribes for a low-water boat ramp, 1.1-mile-long access road, parking lot, picnic shelter, traditional garden, arbor area, and earth lodge on the north side of Saddle Butte Bay in the Skunk Creek Grasslands. The access road leads from a BIA road. In addition to day use recreation activities involving these facilities near Saddle Butte Bay, primitive camping for special events may occur on Corps public lands under terms of a special use permit.

Other Important Past Management Activities. Much of the land in these vegetative management areas is leased for livestock grazing under programs administered by the BIA or the Corps.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for these vegetative management areas include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;



- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for these vegetative management areas include the following, not in priority order:

- Manage grazing and agricultural uses in a manner that maintains adequate vegetative cover for wildlife habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Focus any facility-based recreation use in areas where such use is compatible with natural resources;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Control noxious weeds by chemical, biological and/or mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.56. INDIAN HILLS RECREATION AREA**

**MANAGEMENT UNIT (MU): 060**

Land Classification. Recreation

Managing Agency. North Dakota Parks and Recreation Department (NDPRD) in cooperation with Three Affiliated Tribes

Location. The Indian Hills Recreation Area is shown on Sheet 7 (of 22) in Appendix A. The recreation area is located in Section 25, T148N, R90W, and 77.3 acres located in the W½ of Section 36, T148N, R90W, in McLean County, North Dakota (ND). The MU is located north of Good Bear Bay and is 15 miles west and south of the city of White Shield, ND. The MU is accessed from ND Highway 1804 by a gravel road 3 miles long. Access across the adjacent land owned by the third-party concessionaire is guaranteed even if they cease operation and management of the Indian Hills recreation and resort areas. The MU contains approximately 126.09 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. This area consists of upland grassland and drainage bottom ecosystems. Although more heavily vegetated than a "true" badlands, the area displays the abrupt changes in

elevation typical of a badlands. The predominant soil association in the northern half of the MU is Zahl-Cabba, with soils that are deep to shallow, moderately steep to steep, well drained, and medium textured; they formed on glaciated soft shale uplands. Soils in the southern half of the MU are about 90 percent Cohagen-Vebar Complex (15 to 35 percent slopes) with medium runoff potential and low fertility, and 10 percent Williams-Bowbells loam (6 to 9 percent slopes) that is more fertile and well drained, with medium runoff potential and moderate susceptibility to erosion. Shoreline erosion has caused cutbanks to form.

Vegetation. Vegetation consists mostly of grassland species with a mix of tree and shrub species. The grassland areas in this MU include wheatgrass, grama grasses, green needlegrass, prairie junegrass, and needle-and-thread grass. Wildflowers include spotted gay feather, purple coneflower, skeleton weed, yarrow, and fringe sage. Dominant trees are cottonwoods, green ash, and American elms. Shrubs include chokecherry, buck brush, buffalo berry, and wild plum. Noxious weeds include salt cedar, leafy spurge, Canada thistle, and wormwood.

Fish and Wildlife. The area is known for its high quality walleye fishery and receives significant fishing pressure. Wildlife is abundant in the area due to fairly good habitat. The primary game species include white-tailed deer, sharp-tailed grouse, ring-necked pheasant, and a wide variety of waterfowl. Non-game mammalian species known to occur in the area include coyotes, gophers, cottontail rabbits, skunks, grey squirrels, porcupines, ground squirrels as well as many rodent species. Various amphibian and reptile species inhabit the area and include plains garter snakes, prairie rattlesnakes, western chorus and northern leopard frogs, Canadian toads, Great Plains toads, snapping turtles, and tiger salamanders. Upland avian species include turkeys, rock wrens, black-capped chickadees, Hungarian partridges, western meadowlarks, and other songbirds. Waterfowl such as Canada geese and various duck species frequent the area. Shorebirds and raptors are also common. In 2002, a piping plover nesting site was located adjacent to the MU within the lakebed exposed by the low pool elevations. The MU receives significant hunting pressure. Close coordination between the U.S. Army Corps of Engineers (Corps), the NDPRD, the ND Game and Fish Department, and the Three Affiliated Tribes continues to be important in resolving jurisdictional questions regarding whether tribal conservation permits are legally required and the extent of the tribal game warden's jurisdiction.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	18,256	2001	19,438
1996	16,775	2002	22,951
1997	18,589	2003	20,048
1998	18,018	2004	19,615
1999	18,852	2005	19,879
2000	24,345	2006	19,675

Recreation. The Indian Hills Recreation Area is operated for camping and day use by a third-party concessionaire. Facilities at the recreation area include 3 high and low water boat ramps, boat docks, numerous boat slips, a fish cleaning station, a concession/office building and restaurant, a boat fuel pump, boat rentals, a dump station, primitive campsites, a storage shed, 5 vault toilets, drinking water, lights, and a Lewis and Clark historical monument. In addition, the concessionaire operates additional facilities located wholly or partially on adjacent land from

mid-March to mid-January, catering to fishermen, hunters, campers, boaters, and other user groups. These Indian Hills Resort concession facilities include 2 group camping areas and campsites with picnic tables, fire rings, and some 30-amp electrical hookups; 4 cabins available on a daily, weekly, or monthly basis; gravel roads; and an airfield. This recreation area regularly hosts local and national hunting and fishing celebrities who tape their programs in the area and thus promotes ND tourism. The 77.3-acre expansion of the Indian Hills Recreation Area to the south was approved in 2004 for cost-shared construction of a ND Lewis and Clark Legacy Trail with interpretive signage to promote non-motorized trail activities and cultural and environmental education. In 2005, a dirt trail about 3 feet wide was created along the 1.03-mile alignment, and an entrance sign and benches were installed to provide for mountain bikers, hikers, and joggers. Phase II was constructed in 2007 and includes a dirt trail about 3 feet wide and 4.44 miles long extending to the northwest, on lands adjacent to Corps public lands; an interpretive kiosk at the parking-lot trailhead that serves both trails; and nine interpretive signs installed along both trail alignments.

Other Important Past Management Activities. This entire recreation area had a land classification of Vegetative Management in the 1978 Master Plan. The land classification was revised to Recreation for the 64.4-acre leased area in Master Plan Supplement 1, approved in March 1984, and for the 77.3-acre leased area in Master Plan Supplement 10, approved in November 2004.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Continuously monitor facilities to provide a usable boat ramp throughout the recreation season;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, sightseeing, and non-motorized trail activities;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Construct improved low-water ramps during drought conditions that can withstand wind and wave action and remain undamaged during high pool levels;
- Identify all low-water ramps by Global Positioning System (GPS) so they can be located at normal and high pool levels;
- Provide improved road access to low-water ramps;
- Construct and maintain navigational beacons;
- Provide development opportunities to concessionaires for water-related activities;
- Expand parking areas to accommodate increased visitation;
- Construct additional overnight rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Improve the non-motorized multi-use trail system;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline at the main boat ramp, the concession building, and other areas where needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide access for hunting on adjacent project lands;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.57. MIDDLE REGION WILDLIFE MANAGEMENT AREAS (WMA'S):**

**DEEPWATER CREEK WMA**

**MANAGEMENT UNIT (MU): 061**

**VAN HOOK WMA**

**MANAGEMENT UNIT (MU): 066**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. North Dakota Game and Fish Department (NDGFD)

Location. Deepwater Creek WMA is shown on Sheets 8, 11, and 12 (of 22) in Appendix A. It is located in McLean County, North Dakota (ND). It surrounds Deepwater Creek Bay and is located approximately 15 miles south of the town of Parshall, ND. Deepwater Creek WMA contains approximately 2,675.93 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The leased area contains 2,678.2 acres above 1850 feet msl.

Van Hook WMA is shown on Sheets 12 and 13 (of 22) in Appendix A. It is located entirely in Mountrail County, ND. This horseshoe-shaped WMA surrounds the Van Hook Arm and is located 7 miles west of Parshall, ND and 1 mile southeast of New Town, ND. Van Hook WMA contains approximately 4,217.90 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet msl. The leased area contains 4,781.4 acres above 1850 feet msl.

Topography and Soils. The topography of both WMA's is characterized by relatively flat lowlands with some gently rising hills and ridges. In Deepwater Creek WMA, soils south of Arikara Bay and soils in the middle of the north shore area of Deepwater Creek Bay are loess mantled, medium to moderately fine textured, and occur on terraces and uplands. The soils on

the south shore of Deepwater Creek Bay are medium to moderately fine textured glacial till. The rest of the north shore of Deepwater Creek Bay is characterized by medium textured soils on glaciated soft shale uplands. Deepwater Creek WMA has lost over 218 acres to shoreline erosion, especially along shorelines that front north and west.

Van Hook WMA has five soil associations, two localized and three widespread. Soils in the eastern part of Parshall Bay are deep, medium textured, nearly level to level, and poorly to well drained. Soils found in the northwest corner of the WMA are deep, medium textured, nearly level to steep, and somewhat excessively to excessively drained. Soils that occur along the east shore of Shell Creek Bay are deep, moderately coarse to coarse textured, nearly level to moderately sloping, and well drained to somewhat excessively drained. Soils that occur south of Parshall Bay, along the Van Hook town site peninsula, and along the west shore of the Van Hook Arm are deep, medium textured, undulating and gently rolling, and well drained. Soils found along the west shore of Shell Creek Bay and the northwest shore of the Van Hook Arm are deep, medium textured, gently rolling to hilly, and well drained. Van Hook WMA does not have a major erosion problem and has lost only 29 acres to shoreline erosion.

Vegetation. The vegetation in both WMA's is dominated by grasslands, which cover approximately half the land area. Native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers are included in this plant community.

About a fourth of Deepwater Creek WMA and over half of Van Hook WMA has been planted to crops under a cropshare program with area farmers to provide wildlife food plots. Over 1,700 acres of former croplands in Van Hook WMA have been seeded to herbaceous cover for wildlife use.

Trees and shrubs in 2-row wildlife travel lanes and block-shaped winter cover plantings total over 135 acres in Deepwater Creek WMA and over 250 acres in Van Hook WMA. Clumps of native trees and shrubs are scattered throughout both WMA's.

Van Hook WMA contains about 166 acres of wetlands that are primarily small scattered prairie potholes in the west and northern parts of the WMA. Deepwater Creek contains only about 17 acres of wetlands.

Both WMA's have problems with Canada thistle, and Deepwater Creek WMA also has minor problems with leafy spurge.

Fish and Wildlife. Permanent mammalian residents of the WMA's include white-tailed deer, mule deer, pronghorn, coyote, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many species of rodents. Avian species that use the WMA's include upland game birds such as ring-necked pheasants, Hungarian partridges, and grouse. Waterfowl, shorebirds, raptors, and songbirds also frequent both WMA's. The Van Hook WMA wetlands and the inlets along the shore at both WMA's are used in the spring, summer, and fall by waterfowl and shorebirds as nesting, brood raising, and staging areas.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for these wildlife management areas.

Recreation. Hunting, including upland, waterfowl, and big game is the primary recreational activity in both WMA's. Other activities include shore fishing, hiking, and camping. Deepwater Creek Bay is a popular boat fishing area. Public use facilities at Deepwater Creek WMA include

a concrete boat ramp constructed by the NDGFD, a primitive campground, vault toilet, and courtesy dock. In addition, the Corps constructed a gravel low-water boat ramp with concrete plank extensions along an inlet south of the Deepwater Cottage Site area to replace the ramp at the Deepwater Creek Recreation Area that could not be used during low pool elevations. The portion of the Deepwater Creek WMA in the vicinity of the recreation facilities has little value for wildlife due to disturbance from the large number of visitors. Vehicle use is restricted in the south portion of Deepwater Creek WMA.

Van Hook WMA has several small parking lots with walk-through gates in the boundary fence, and access points to the lake are available on the north side of Parshall Bay and at Flag Point for winter ice fishing and summer shoreline fishing. However, at both WMAs the public has created off-road vehicle (ORV) trails in areas where motor vehicles are prohibited, and the boundary fence has been cut illegally for ORV access to Van Hook and Deepwater Creek WMA's.

Other Important Past Management Activities. Some of the grassland areas at both WMA's are grazed under a program administered by the NDGFD.

Cultural Resources. Prior to any future development at or near these wildlife management areas, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for these wildlife management areas include the following, not in priority order:

- Manage wildlife and fishery resources to support propagation of the species;
- Encourage hunting and related outdoor recreation opportunities;
- Permit compatible outdoor recreation opportunities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation and interpretation, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Protect, conserve, and/or improve habitat for a variety of wildlife species, including threatened and endangered species;
- Maintain and improve the quality and diversity of vegetative resources to provide food and cover for a variety of wildlife species;
- Promote water quality and reduce erosion by stabilizing the shoreline if needed;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for these wildlife management areas include the following (not in priority order), many of which are detailed in the management plan, grassland management plan, and/or cropland management plan for each WMA:

- Continue restricted vehicle access to reduce disturbance to wildlife and destruction of habitat, and improve hunting quality and wildlife observation opportunities, in conformance with the Shoreline Management Plan and Shoreline Access Policy;
- Consider improving recreation facilities at Deepwater Creek WMA to meet public needs;
- Install better fencing and signage as needed to restrict and control vehicle traffic and use at the public use area on the north side of Parshall Bay at Van Hook WMA;
- Survey boundaries at Deepwater Creek WMA and complete the boundary fencing;
- Continue to contract with adjacent landowners to provide wildlife food plots;

- Improve wildlife habitat by reducing croplands to 10 to 15 percent of Deepwater Creek and Van Hook WMA's, planting several different crops (including a clover rotation), and intermingling fields and herbaceous cover;
- Increase grassland quality by rotational grazing on the west side of Van Hook WMA, north and south of the Littlefield Bay area;
- Continue haying rotation to enhance and rejuvenate planted grasses and forbs in formerly cropped areas in Van Hook WMA;
- Increase the vigor of native grasses and forbs by periodic prescribed burning at other areas in both WMA's;
- Control noxious weeds, especially leafy spurge and Canada thistle;
- Provide appropriate protection for any cultural resources;
- Participate in cooperative efforts involving the Corps, the ND Game and Fish Department, and the Three Affiliated Tribes to resolve jurisdictional issues regarding enforcement against trespass livestock grazing, fence cutting, and vehicle trespass.

#### **7.58. DEEPWATER CREEK RECREATION AREA**

**MANAGEMENT UNIT (MU): 062**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Deepwater Creek Recreation Area is shown on Sheet 11 (of 22) in Appendix A. It is located in Section 12, T149N, R90W, in McLean County, North Dakota (ND). The area is located on the north shore of Deepwater Creek Bay and is 14 miles south of Parshall, ND. The MU contains approximately 16.68 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a 1-mile gravel road from ND Highway 37.

Topography and Soils. The topography of the Deepwater Creek Recreation Area is typical of low rolling uplands. The predominant soil association is Zahl-Cabba, which consists of deep to shallow, moderately steep, well drained, and medium textured soils on glaciated soft shale uplands.

Vegetation. The recreation area itself is located within an upland grassland ecosystem comprised primarily of cool season grasses. The grasses within the recreation area are primarily Kentucky bluegrass and red fescue. Woody vegetation in this area consists primarily of ashes and elms planted for aesthetic purposes.

Fish and Wildlife. No significant amount of wildlife exists within the recreation area proper. The North Dakota Game and Fish Department, which manages the adjacent Deepwater Wildlife Management Area for wildlife conservation and habitat preservation, occasionally stocks walleye in this recreation area that were reared in the Garrison National Fish Hatchery.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	13,835	2001	4,889
1996	15,120	2002	3,975
1997	20,164	2003	4,250
1998	19,377	2004	14,664
1999	15,086	2005	15,016
2000	7,203	2006	15,610

**Recreation.** The Deepwater Creek Recreation Area is primarily a primitive camping area; however, at times it has been the second-busiest Corps-operated recreation area on the lake. The MU receives high visitation when the walleye fishing is good in the area. The recreation area also hosts hunters who utilize adjacent public lands. Facilities include a boat ramp, a 10-vehicle parking lot, 10 primitive campsites consisting of a picnic table and grill with no pads or individual sites delineated, two vault toilets, one operational and one non-operational (capped) well, and a picnic shelter. The gravel road system in the area was elevated significantly above the adjacent areas during construction and hinders the use of the individual camping areas.

**Other Important Past Management Activities.** The Corps developed this area and has administered it since its inception. The Corps' 1996 Operational Management Plan indicated that the area needed to be redesigned to better suit current user needs.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing facilities and circulation roads;
- Provide facilities for family and group camping activities;
- Provide lake access for fishing, boating, and other water-oriented activities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.



Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade the campground area with modern amenities;
- Construct camping pads;
- Install utilities to satisfy infrastructure needs;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Replace the existing kiosk with a recycled plastic kiosk;
- Update visitor safety information using signage and bulletin boards as appropriate;
- Replace an existing vault toilet to meet Americans with Disabilities Act (ADA) standards;
- Improve the entrance road and interior roads (18,000 square feet);
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.59. LAKESHORE NEAR DEEPWATER COTTAGE SITE**

**MANAGEMENT UNIT: 063**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Deepwater Cottage Site is shown on Sheet 11 (of 22) in Appendix A. It is located on the Raub NW USGS topographic map, in Section 18, T149N, R90W, in McLean County, North Dakota (ND). The MU is located north of Deepwater Creek Bay and is approximately 17 miles southwest of Parshall, ND. The area is accessed by 3.5 miles of graveled county road. The MU contains approximately 25.03 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. Topography in this area is typical of low rolling prairie. The area is an upland grassland ecosystem. The dominant soil association is Zahl-Cabba: deep to shallow, moderately steep and steep, well drained, medium textured soils on glaciated soft shale uplands.

Vegetation. Vegetation in the area consists primarily of ash, Russian olive, cottonwood, and elm trees, including a variety of other species that have been planted by the cottage owners. The primary grass in the area is Kentucky bluegrass.

Fish and Wildlife. This area provides some of the better walleye fishing on the reservoir. The fishery is negatively impacted by the volume of boat traffic, related discharge of petroleum products, and constant stirring of silt. Due to the degree of development of this area, wildlife consists mostly of songbirds and rodents.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Deepwater Cottage Site, with occasional shoreline fishing. Shoreline use is authorized for this area in the

Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The lots at the Deepwater Cottage Site were sold to the individual cottage owners in 1961.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Manage the area in the best interest of the general public;
- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.60. ARROWHEAD RESORT RECREATION AREA**

**MANAGEMENT UNIT (MU): 065**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Arrowhead Resort Recreation Area is shown on Sheets 11 and 12 (of 22) in Appendix A. It is located in Sections 19, 29, and 30, T150N, R90W, in McLean County, North Dakota (ND). The MU is located adjacent to Lucky Mound Creek Bay and is approximately 14 miles southwest of the city of Parshall, ND. The MU contains approximately 85.49 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). Access to the area is across the Fort Berthold Reservation.

Topography and Soils. The topography of this area consists of upland grassland and drainage bottomland ecosystems. The predominant soil in the area is Zahl-Cabba: deep to shallow, moderately steep and steep, well-drained, medium-textured soils on glaciated soft shale uplands. The distinct change in elevation in this area makes access to the shoreline difficult, but accounts for its scenic beauty.

Vegetation. Vegetation consists of cottonwood, ash, elm, box elder, buckbrush, and hawthorne. The primary grasses in the area are wheat grasses, needle grasses, and grama grasses.

Fish and Wildlife. Upland game and white-tailed deer are present within and around this area.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this MU.

Recreation. The Arrowhead Resort Recreation Area is undeveloped and has limited recreational use. Current recreational use in this area consists of occasional shoreline fishing and minimal upland and big game hunting due to limited accessibility by land.

Other Important Past Management Activities. This area was originally managed as a grassland (vegetation) management area by the Corps and the Three Affiliated Tribes. The land classification of this area was changed to Recreation by Master Plan Supplement 3, approved in September 1986, which established this recreation area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Manage the lands for the benefit of the public;
- Maintain the area against encroachments and unauthorized grazing;
- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use;
- Provide facilities for family and group camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;

- Improve access and circulation roads;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Construct a 40 foot boat dock;
- Install a concrete boat ramp;
- Construct a fish cleaning station;
- Construct a public access road and graveled parking area;
- Develop a water well and water distribution system;
- Construct a concession building;
- Install vault toilets;
- Construct showers if warranted by visitor demand;
- Construct camping pads and recreational vehicle camping stalls;
- Install electrical hookups in the camping areas;
- Install picnic tables;
- Install fire grates;
- Construct a fence around the recreation area and access road to prohibit use by cattle and to minimize off-road vehicle use;
- Construct a caretaker's house, rental cabins, boat storage, boarding stables, and a riding arena on adjacent land;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, horseback riding, photography, bird watching, and sightseeing;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.61. PARSHALL BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 067**

Land Classification. Recreation

Managing Agency. Mountrail County Park Board

Location. The Parshall Bay Recreation Area is shown on Sheet 13 (of 22) in Appendix A. It is located in Sections 1, 2, 3, 10, & 11, T151N, R91W, in Mountrail County, North Dakota (ND). The MU is adjacent to Parshall Bay and is 10 miles west of the city of Parshall, ND. The MU contains approximately 166.84 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The MU is accessed by 10 miles of paved roads from ND Highway 37; roads within the MU are surfaced with gravel.

**Topography and Soils.** The topography of this area is typified by low rolling prairie. The primary soil association is Williams-Zahl. This soil type is deep, medium textured, undulating and gently rolling, and well drained. The secondary soil association is Harriet-Korchea. This soil type is deep, medium textured, level and nearly level, and poorly drained to well drained.

**Vegetation.** The primary vegetative type in this recreation area consists of an upland grassland ecosystem dominated by a mixture of cool and warm season grasses. The shorelines are vegetated primarily with willows and cottonwoods, and ash is also found in this area.

**Fish and Wildlife.** This recreation area is a major access point to one of the better fisheries on the reservoir. The area supports upland game birds on the eastern end. Interior least terns and piping plovers (threatened and endangered species) occur within the adjacent area of the Van Hook Arm. Little suitable habitat is available in this recreation area at normal pool elevations, but a significant drop in the lake's elevation results in an increase of suitable tern and plover habitat.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	42,825	2001	85,715
1996	54,317	2002	79,348
1997	70,256	2003	76,912
1998	54,098	2004	64,707
1999	54,323	2005	53,086
2000	47,876	2006	64,385

**Recreation.** The Parshall Bay Recreation Area is a major access point to the Van Hook Arm, one of the better fisheries at Lake Sakakawea, and provides for both day use and camping. Available facilities include 4 boat ramps, 2 fish cleaning stations, 43 campsites with 30-amp electric hookups, a dump station, a group camp shelter, picnic tables and fire rings, potable water, flush toilets, playground equipment, and gravel circulation roads. In 1990, the Mountrail County Park Board began leasing the former low-density recreation portion of the recreation area because of the high number of visitors using the two low-water boat ramps. The low-water ramp area also has a vault toilet and a moderate to high amount of primitive camping use. The former low-density recreation area currently has a land classification of Recreation because the continued increase in visitation at the low-water ramp area resulted in the need for visitor controls consistent with an intensive-use recreation area.

**Other Important Past Management Activities.** The primitive recreation area portion of the Parshall Bay Recreation Area previously had a land classification of Multiple Resource Management: Recreation – Low Density.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide facilities for family and group day use and camping activities;
- Develop/improve boat ramp access roads, circulation roads, and parking areas;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Control shoreline and soil erosion in areas where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Develop new low water ramps, with road access and parking areas;
- Repair/extend the west ramp near the primitive campground;
- Install a new dock;
- Replace the vault toilet in the primitive camping area;
- Install additional electrical hook-ups and additional lighting in the developed campground;
- Construct a building for storing park equipment;
- Add rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Provide additional facilities if needed to meet public demand;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, photography, and sightseeing.

## **7.62. VAN HOOK RECREATION AREA**

**MANAGEMENT UNIT (MU): 068**

Land Classification. Recreation

Managing Agency. Mountrail County Park Board

Location. The Van Hook Recreation Area is shown on Sheet 13 (of 22) in Appendix A. It is located in Sections 29, 31, and 32 of T152N, R91W, in Mountrail County, North Dakota (ND). The MU is located 7 miles east and 2 miles south of New Town, ND. The MU contains approximately 31.28 acres of project lands calculated in ArcView GIS without regard to actual

relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a paved county road.

**Topography and Soils.** The topography of this area is typical of low rolling prairie. The principal soils association is Zahl-Cabba, which consists of deep to shallow, moderately steep and steep, well drained, medium textured soils on glaciated soft shale uplands.

**Vegetation.** Shoreline vegetation within this area consists primarily of cottonwoods, willows, some box elder, and elms. A variety of natural and hybrid ornamental species have been planted within the recreation area. Kentucky bluegrass is the predominant grass species within the recreation area.

**Fish and Wildlife.** A variety of game and non-game species typical of the area are found within this MU. Little habitat for these species occurs within the recreation area.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	52,617	2001	83,308
1996	46,314	2002	92,158
1997	52,970	2003	83,744
1998	55,125	2004	64,850
1999	54,914	2005	66,250
2000	57,464	2006	74,758

**Recreation.** The Mountrail County Park Board leases the Van Hook Recreation Area for intensive use recreation. As the major recreation area within the Van Hook Arm, this area receives the largest volume of fishing-related visitor use during all seasons. The fishery within the Van Hook Arm is one of the best on Lake Sakakawea. Available facilities include a developed campground with 75 campsites, 36 of which have 30-amp electric hookups. The campground also has fire rings and picnic tables. Other camping facilities include a few primitive campsites, a group camping area, and 7 group camping shelters. Facilities for boating access include two high and two low water boat ramps, boat docks, boat refueling, and a parking lot. Other facilities at this MU are a concession building, a day use area, a swimming beach, picnic shelters, picnic tables, a playground, a fish cleaning station, a dump station, vault and flush toilets, showers, and a breakwater. In 2007, two temporary low-water ramps were installed on Gull Island to provide lake access during drought-related low pool levels.

**Other Important Past Management Activities.** This MU is located in the northern half of the former town site of Van Hook, the southern half of which was inundated by the lake. The Corps relocated all buildings and other improvements except for sidewalks, roads, and some foundations. In 1984, the Mountrail County Park Board purchased 16 acres of property that the Corps had declared excess; a mobile home park was developed there, as were a store with above-ground fuel tanks and some recreation facilities.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be

eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Continuously monitor facilities to provide a usable boat ramp throughout the recreation season;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Install a new boat dock (48' long);
- Complete construction of a breakwater;
- Replace the old concrete ramp on the east side of the breakwater;
- Build camping shelters;
- Add rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Install a vault toilet in the north camping area;
- Add park lights in the leased area;
- Provide additional facilities if needed to meet public demand;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Replace dead trees as needed in the new tree planting area;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.63. POUCH POINT RECREATION AREA**

**MANAGEMENT UNIT (MU): 070**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Pouch Point Recreation Area is shown on Sheet 12 (of 22) in Appendix A. It is located on the New Town SW USGS topographic map, in Sections 23 and 24, T150N, R92W in Mountrail County, North Dakota (ND). The MU is located north of Pouch Point Bay and is 15 miles south and east of New Town, ND, from which it is accessed by gravel-surfaced county



roads. This MU contains approximately 54.27 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of the Pouch Point Recreation Area consists of low rolling prairie. The primary soil association is Cabba-Zahl-Shambo. This soil type consists of shallow and deep, medium textured and moderately fine textured, moderately sloping to very steep, well drained soils.

Vegetation. The overriding vegetative characteristic within this area is an upland grassland ecosystem. The area has sparse woody vegetation consisting primarily of cottonwoods.

Fish and Wildlife. This area enjoys access to some of the best fishing on the reservoir. While more remote and less visited than many of the areas within the Van Hook Arm, it does not have an abundance of upland or large game due to extensive agriculture and limited habitat within the area.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	7,834	2001	10,590
1996	9,716	2002	14,811
1997	10,549	2003	16,084
1998	10,213	2004	13,725
1999	10,343	2005	16,551
2000	8,219	2006	10,663

Recreation. The Pouch Point Recreation Area is primarily used for lake access for fishing and pleasure boating. It has boat ramps, boat docks, boat refueling, and a parking lot area. The MU has a developed campground with 40 campsites, 20 of which have 30-amp electric hookups. The campground also has picnic tables and fire rings. Other available facilities include covered picnic shelters, two concession buildings, two storage buildings, a dump station, a restroom/shower building, flush and vault toilets, primitive camping, a playground, one rental cabin, and one rental trailer.

Other Important Past Management Activities. In 2005, when drought conditions resulted in low pool elevations, a county road was extended to the shore of the lake. The road provided access to a concrete low-water boat ramp with large gravel parking area that the Corps constructed to ensure lake access for boating at the Pouch Point Recreation Area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;

- Recognize the significance of both water-oriented and land-based activities;
- Provide facilities for family and group camping activities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Promote ecological integrity by controlling noxious weeds;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Remove the vault toilet;
- Develop additional recreational vehicle (RV) camping sites and install additional electrical hookups;
- Add a fish cleaning station with upgraded disposal facilities;
- Install additional playground equipment;
- Construct additional restrooms;
- Install additional showers;
- Construct additional rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Construct a new store to replace the old store;
- Construct a new restaurant, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Provide additional facilities if needed to meet public demand;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.64. SANISH AGRICULTURAL LEASES WILDLIFE AREA      MANAGEMENT UNIT (MU): 071**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Sanish Agricultural Leases Wildlife Area is shown on Sheets 14 and 15 (of 22) in Appendix A. It is located in Sections 5, 7, 8, 16 - 20, 30, and 31, T151N, R93W; and Sections 22, 23, 27, 28, 32, 33, and 34, T152N, R93W, in Mountrail County, North Dakota (ND). The MU is located approximately 3 miles west of the city of New Town, ND and is adjacent to Reunion Bay. It is accessed from ND Highway 23 by roads at least 8 miles long. The MU contains approximately 2,183.25 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of badlands. The area experiences significant rates of erosion. The primary soil association is Cabba-Zahl-Shambo. These soils are

shallow and deep, medium textured and moderately fine textured, moderately sloping to very steep, and well drained. The secondary soil association is Harriet-Korchea, consisting of deep, medium textured, level and nearly level, poorly drained and well drained soils. The tertiary soil association is Cabba-Badlands which consists of badlands and shallow, medium textured, moderately sloping to very steep, well drained soils.

Vegetation. Vegetation in the area not under cultivation consists mainly of upland grasses. The deep draws within this area contain light to moderate vegetation with a predominant mix of cottonwoods, willows, ash, and elm.

Fish and Wildlife. Because access to the shoreline within this area is minimal, there is little shore-based fishing pressure. The area of Lake Sakakawea abutting this MU is not a preferred fishery. Wildlife populations are abundant within this area.

Visitation. The Corps records visitation at Reunion Bay in this wildlife management area. The number of visits recorded by the Corps at Reunion Bay during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	Not available	2001	4,953
1996	Not available	2002	7,776
1997	Not available	2003	5,864
1998	Not available	2004	5,012
1999	Not available	2005	4,046
2000	5,197	2006	4,406

Recreation. Reunion Bay is a moderately popular boat launching area. Recreational use outside of Reunion Bay is limited and consists of minimal hunting of deer and upland game. The shoreline is used occasionally for boating and fishing.

Other Important Past Management Activities. The lands described above have historically been available as priority leases to the former owner from the time the Corps assumed ownership. The three types of agricultural leases have been haying, grazing and row crops.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;

- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively manage grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.65. CROW FLIES HIGH AREA**

**MANAGEMENT UNIT (MU): 072**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Crow Flies High Area is shown on Sheet 15 (of 22) in Appendix A. It is located on the New Town USGS topographic map in Sections 13 and 14, T152N, R93W, in Mountrail County, North Dakota (ND). This MU is located along the southwest shore of Sanish Bay below elevation 1850 feet above mean sea level (msl). Access to the MU is via prairie trail from the New Town Marina or by boat. The MU is 2 miles west of the city of New Town. The MU contains approximately 27.03 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. Topography in this shoreline area is steep, with slopes of 30 to 70 percent towards ridges or hilltops, typical of badlands. The soils in this area are in the Cabba-Zahl-Shambo soil association, which is found in badlands areas.

Vegetation. Thin soils on the slopes support little bluestem, sand reed, buffalo grass, and wheat grasses. There are a couple of minor woody draws that contain tree and shrub species common to this area.

Fish and Wildlife. This reach of Lake Sakakawea is one of the best for the walleye and sauger fisheries. Wildlife common to this area of ND are found in this MU, but mammal abundance is minimal due to heavy human disturbance and habitat reduction in the surrounding areas. Disturbances arise from the New Town Marina that borders the MU on the east and vehicular traffic to the south of the MU on ND Highway 23, which runs east-west between Lake Sakakawea and New Town.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. This recreation area offers opportunities for day use along the shoreline of Sanish Bay and Lake Sakakawea. Recreation in the area is minimal due to limited access. Recreation activities in this area include hiking and shore fishing.

Other Important Past Management Activities. The Crow Flies High Area is part of the 28-acre area formerly known as the New Town Low-Density Public Use Area that was created as a recreation area providing shoreline use for the general public. The Corps determined that land totaling 13 acres in the New Town Low-Density Public Use Area was excess to project purposes. In December 1991 the Corps disposed of the 13 acres to the General Services Administration (GSA), which transferred it to the Bureau of Indian Affairs (BIA) in the summer of 1992 to hold in trust for the Three Affiliated Tribes.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide for access roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate construction of a boat ramp, if access and support facilities are available;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Reestablish native vegetation to enhance views and provide shade;
- Control noxious weeds.

#### **7.66. NEW TOWN MARINA**

#### **MANAGEMENT UNIT (MU): 073**

Land Classification. Recreation

Managing Agency. New Town Park Board

Location. The New Town Marina is shown on Sheet 15 (of 22) in Appendix A. It is located on the Sanish USGS topographic map, in Section 13, T152N, R93W, and the SW ¼ of Section 18, T152N, R92W, in Mountrail County, North Dakota (ND). The MU is located approximately 1 mile west of New Town, ND. The main access to the MU is at the marina entrance from ND Highway 23. The MU contains approximately 170.46 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the New Town Marina area ranges from moderately sloping to very steep slopes. The area is well drained, and runoff is medium to very rapid. The most dominant soil types in the area are Shambo loam (1 to 6 percent slopes), Williams-Zahl loams (6 to 9 percent slopes), Zahl-Williams loams (9 to 25 percent slopes), and Cabba-Shambo-Arikara complex (6 to 75 percent slopes).

Vegetation. Thin soils on the grassland slopes and rolling hills support little bluestem, sand reed, and wheat grasses. The wetlands support rushes, sedges, and cattail. Grasses include wild rye, blue grama, and green needle grass. Silver and fringed sage, rabbitbrush, saltbush, and other woody species are also found here. A few woody draws containing elm, hawthorne, box elder, cottonwood, choke cherry, and wild plum accent the area. Along the upper bay, several large willow trees have taken hold, and junberry and golden willow have been planted. Canada thistle, a noxious weed, has invaded some areas of the MU and proliferates during low water elevations caused by drought.

Fish and Wildlife. This reach of Lake Sakakawea is one of the best for the walleye and sauger fisheries. Common carp use the shallow weedy areas of Sanish Bay for spawning. The amount of wildlife in the MU has been greatly reduced by vehicular traffic on ND Highway 23, heavy human disturbance, and habitat reduction in areas surrounding the MU. Mammals and birds common to ND marshlands are found along the upper reaches of Sanish Bay, and other wildlife species common to this area of ND are found here.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at the New Town Recreation Area and Marina combined during fiscal years 1995 through 2006 are

presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	10,072	2001	11,951
1996	10,400	2002	27,554
1997	10,652	2003	23,954
1998	11,583	2004	23,718
1999	13,903	2005	19,348
2000	11,207	2006	20,914

**Recreation.** The New Town Recreation/Marina area, under a park and recreation lease to the New Town Park Board, is utilized for both day use and camping activities. Recreational opportunities include fishing, boating, camping, Lewis and Clark Legacy Trail activities, and area tourist attractions. Amenities for fishing include a boat ramp, 2 fish cleaning stations (one of which is handicapped-accessible and was constructed in 1993), and a concessionaire-operated bait shop/comfort station which features convenience store items, a fueling facility, showers, and bait. At the time this Master Plan/EA was prepared, Harold “Dusty” Rhoads operated the RA/Marina area as a third-party concessionaire. Within the RA/Marina area, a separate colony site lease was granted to the New Town Marine Club for private exclusive use of 25 trailer lots. The New Town Marine Club maintains a boat dock agreement with the New Town Park Board for the private docks within the RA/Marina area. The concessionaire, in conjunction with the New Town Park Board, provides for mooring, beaching, and dock needs for the general public within the Marina area. Sixty public campsites, all of which have 30-amp electrical hookups, have been developed in the area surrounding the 25 trailer lots, which are located near the shore. The Park Board maintains a vast public use area as well as 2 public freeway accesses within the trailer lot area, and visitation has remained strong.

**Other Important Past Management Activities.** The New Town Marine Club originally managed 30 acres, but it released 21 acres to the New Town Park Board in 1981 and retained only the 9 acres on which the 25 trailers were sited.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;



- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Install a new low water boat ramp;
- Rebuild/upgrade the old wood fish cleaning station;
- Provide development opportunities to concessionaires for water-related activities;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Reconstruct the parking lot;
- Construct parking pads for recreational vehicle (RV) campers;
- Install new playground equipment;
- Construct a new large shelter in the campground;
- Construct rental cabins if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Move the old railroad bed in the west bay area;
- Complete filling in the old railroad ditch;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.67. NEW TOWN WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 074**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The New Town Wildlife Area (WA) is shown on Sheet 15 (of 22) in Appendix A. It is located on the New Town USGS topographic map in Section 13, T152N, R93W, and Section 18, T152N, R92W, in Mountrail County, North Dakota (ND). The MU is located at the southeast end of Sanish Bay. The majority of the MU lies to the south of ND Highway 23. There are no designated access roads to the MU, but access can be obtained from several areas along ND Highway 23. The MU contains approximately 248.49 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of uplands that slope down towards the bay at a gradient of up to 30 percent to form badlands, and relatively flat lowlands near the bay. Soils of the Cabba-Zahl-Shambo association form deep loamy silts in several woody draws and in areas surrounding upper Sanish Bay.

Vegetation. Thin soils on the uplands and on the steep slopes of the MU produce species of grasses adapted to dry areas. Well defined woody draws are thick with common hardwoods. The upper bay region produces wetland species of reed grass, cattails, sedges, and rushes.

Fish and Wildlife. In upper Sanish Bay, a number of fish species, including common carp, breed in the shallow weedy areas. Wildlife common to this area of North Dakota can be found in the MU; however, their abundance is minimal due to heavy human disturbances and habitat reduction in areas that surround the MU. Disturbances include farming and ranching on the upland grassland, noise from vehicular traffic on ND Highway 23, and the city of New Town, which borders the eastern part of the MU. Common North Dakota marshland species of mammals and birds inhabit this area, but their populations are minimal due to the disturbance. When ND Highway 23 was widened, a 1-acre island was constructed within the upper bay on the south side of the highway. This island provides habitat for waterfowl and other marshland species.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. This MU receives minimal recreation use. Recreation activities consist of hiking, hunting, and scenic and wildlife viewing.

Other Important Past Management Activities. A portion of an old railroad grade traverses the MU from northwest to southeast.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.68. NEW TOWN RADIO TOWER AREA**

**MANAGEMENT UNIT (MU): 075**

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The New Town Radio Tower Area is shown on Sheet 15 (of 22) in Appendix A. It is located on the New Town USGS topographic map, in the SE ¼ of Section 18, T152N, R92W, in Mountrail County, North Dakota (ND). The MU is located approximately 1/2 mile west of New Town, ND. It is accessed by a gravel road 150 feet long from ND Highway 23. The MU contains approximately 28.95 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the New Town Radio Tower Area consists of moderately rolling slopes. The dominant soil type is Zahl-Williams loams (9 to 25 percent slopes), which are deep, rolling and hilly, well drained soils on moraines with very rapid runoff.

Vegetation. The vegetation in the MU consists mainly of short to mid-height grass species. Trees and shrubs do not grow in this area because the MU is mowed once per year.

Fish and Wildlife. Small rodents comprise the major wildlife species. The amount and diversity of wildlife in this MU is low due to disturbance from vehicular traffic noise on ND Highway 23 (which runs through the MU) and low value of the habitat available for wildlife. The annual

mowing reduces winter cover and dense nesting cover, and the lack of trees, bushes, and food plots reduces foraging opportunities and nesting sites.

Visitation. The Corps does not record visitation for this project operations area.

Recreation. Recreation activities at this project operations area are minimal and include hiking and sightseeing. This MU has no recreation facilities. A fence approximately 100 feet from the radio tower prevents the public from accessing the tower.

Other Important Past Management Activities. The 1978 Master Plan designated the portion of this MU north of ND Highway 23 as a low-density recreation area, and the portion south of ND Highway 23 as a wildlife management area. Erection of a radio tower in the MU on the north side of ND Highway 23 made a land classification of Project Operations more appropriate.

Cultural Resources. Prior to any future development at or near this project operations area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Provide a secure area for tower-based communication facilities;
- Provide for public use of areas where project operations structures are sited, where such use is feasible and does not interfere with other project purposes;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Promote visitor safety through appropriate signage and fencing;
- Prevent any unauthorized off-road vehicle use by installing signage, fencing, and other barriers;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Control noxious weeds.

## **7.69. NEW TOWN GOLF COURSE/EDGEWATER COUNTRY CLUB**

**MGT. UNIT (MU): 076**

Land Classification. Recreation

Managing Agency. City of New Town

Location. The New Town Golf Course/Edgewater Country Club is shown on Sheet 15 (of 22) in Appendix A. It is located on the Sanish USGS topographic map, in the SW ¼ and SE ¼ of Section 18, T152N, R92W, in Mountrail County, North Dakota (ND). The MU is located approximately 1 mile west of New Town, ND. It is accessed by a gravel road 0.25 miles long from ND Highway 23. The MU contains approximately 70.74 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the New Town Golf Course/Edgewater Country Club consists of gently to moderately rolling slopes. The area is well drained to somewhat excessively drained, and runoff is rapid to very rapid. Soil types in the area include Korchea and Straw loams (0 to 3 percent slopes), Lehr loam (1 to 6 percent slopes), Sakakawea loam (3 to 9 percent slopes), and Zahl-Williams loams (9 to 25 percent slopes).

Vegetation. Thin soils on the grassland slopes and rolling hills support little bluestem, sand reed, and wheat grasses. Other grasses include wild rye, blue grama, and green needle grass. The Edgewater Country Club golf course operators and the U.S. Army Corps of Engineers (Corps) have planted green ash along some borders on Corps lands. Canada thistle, a noxious weed, has invaded some areas of the MU and proliferates during low water elevations caused by drought.

Fish and Wildlife. This reach of Lake Sakakawea is one of the best for the walleye and sauger fisheries. Common carp use the shallow weedy areas of Sanish Bay for spawning. Wildlife common to this area of North Dakota are found here, but their abundance is minimal due to use of this area as a golf course, habitat reduction in adjacent areas, disturbance from vehicular traffic on ND Highway 23, and the proximity of the city of New Town.

Visitation. The Corps does not record visitation at this recreation area.

Recreation. The area leased and managed by the city of New Town for park and recreation purposes is operated as Edgewater Golf Course. Improvements to the leased area includes an entrance, tree plantings, two golf cart storage barns, and maintenance facilities.

Other Important Past Management Activities. In accordance with the guidelines for hay disposal on the Lake Sakakawea project, a portion of the Corps lands leased for the golf course is hayed to provide for noxious weed control and a fire break.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Provide for a quality golfing recreation experience;
- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;

- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect golf course facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.70. NEW TOWN RECREATION AREA**

**MANAGEMENT UNIT (MU): 077**

Land Classification. Recreation

Managing Agency. New Town Park Board

Location. The New Town Recreation Area is shown on Sheet 15 (of 22) in Appendix A. It is located on the Sanish USGS topographic map, in the NW ¼ of Section 18, T152N, R92W; and the N ½ of Sections 13 and 14, and the SE ¼ of Section 11, T152N, R93W, in Mountrail County, North Dakota (ND). The MU is located about 1 mile northwest of New Town, ND, along the northern shore of Sanish Bay. It is accessed from ND Highway 1804 by a paved road 0.25 miles long. The MU contains approximately 199.17 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the New Town Recreation Area consists of gently to moderately rolling slopes. The area is well drained, and runoff is rapid to very rapid. Dominant soil types include Shambo loam (6 to 9 percent slopes), Zahl-Williams loams (9 to 25 percent slopes), Cherry-Cabba complex (9 to 60 percent slopes), and Cabba-Shambo-Arikara complex (6 to 75 percent slopes).

Vegetation. Thin soils on the grassland slopes and rolling hills support little bluestem, sand reed, and wheat grasses. Other grasses include wild rye, blue grama, and green needle grass. Silver and fringed sage, rabbitbrush, saltbush, and other woody species are also found here. A few woody draws containing elm, hawthorne, box elder, cottonwood, choke cherry, and wild plum accent the area. The wetlands drainage ecosystem supports rushes, sedges, and cattails. Canada thistle, a noxious weed, has invaded some areas of the MU and proliferates during low water elevations caused by drought.

Fish and Wildlife. This reach of Lake Sakakawea is one of the best for the walleye and sauger fisheries. Common carp use the shallow weedy areas of Sanish Bay for spawning. Marshland

species of mammals and birds common to ND inhabit the MU. Wildlife common to this area of ND are found here, but their abundance is minimal due to heavy human disturbance and habitat reduction in areas that surround the MU.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at the New Town Recreation Area and Marina combined during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	10,072	2001	11,951
1996	10,400	2002	27,554
1997	10,652	2003	23,954
1998	11,583	2004	23,718
1999	13,903	2005	19,348
2000	11,207	2006	20,914

Recreation. Recreation activities and facilities focus on day use. Two boat ramps and a parking area are located in the western part of the MU and are operated and maintained by a third-party lessee. Vault toilets, picnic shelters, picnic tables, and a playground were installed in 1973 on a cost-share basis. Partly due to lack of road access, much of the shoreline within the MU is undeveloped.

Other Important Past Management Activities. The Park Board divided this area into two halves for management purposes and relocated some recreation facilities to the New Town Marina area. At the time this Master Plan/EA was prepared, Gerald Aftem was the third-party lessee, and the MU was also referred to as the Sanish Bay Recreation Area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Develop road and lake access and marina facilities at the inlet north of Sanish Bay;
- Provide a variety of facilities for other day use activities and camping to meet public needs;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.71. LITTLE KNIFE GRASSLANDS WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 078**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Knife Grasslands Wildlife Area (WA) is shown on Sheets 15 and 16 (of 22) in Appendix A. It is located on the Charlson NE, Rat Lake, Rat Lake SW, Rat Lake SE, and Sanish USGS topographic maps, in Sections 1 and 11, T152N, R93W; Sections 31-33, T153N, R92W; Sections 2 and 3, T152N, R93W; Sections 6, 8, 9, 16, 22, 23, 26, 35, and 36, T153N, R93W; and Sections 20-23, 25-28, and 36, T154N, R94W, all in Mountrail County, North Dakota (ND). The WA extends from the southern side of Little Knife Bay to 2 miles west of White Earth Bay, except for two 1-mile-long reaches that are occupied by the Little Knife Low-Density Recreation Area and the White Earth Bay WA. The Little Knife Grasslands WA is accessed from ND Highway 1804 and by gravel roads leading from Highway 1804. The WA contains approximately 4,012.95 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Little Knife Grasslands WA consists of gently to steeply sloping uplands. Dominant soil types include Williams-Zahl loams (6 to 9 percent slopes), Zahl-Williams loams (9 to 25 percent slopes), Zahl-Max loams (25 to 60 percent slopes), Wabek loam (1 to 35 percent slopes), Cherry-Cabba complex (9 to 60 percent slopes), Badland-Cabba complex (9 to 70 percent slopes), Cabba-Shambo-Arikara complex (6 to 75 percent slopes), and Cabba-Badland complex (9 to 70 percent slopes). All are well drained, except for Wabek loam, which is excessively drained.

Vegetation. Short to medium mixed native grasses mixed with shrubs cover most of this WA. However, many badlands areas with slopes greater than 60 percent lack vegetation and have exposed soil. Extensive wooded areas are dominant in the canyons and coulees of the WA. Junipers grow readily outside the woody draws on steep slopes up to 60 percent. In the Little Knife Bay area are several mature mitigation block plantings of cottonwood, elm, and other hardwood trees. Several backwater bays along the length of the WA have been cut-off from the main lake and are filling in to form shallow pond and/or marsh type habitats.



Fish and Wildlife. Big game found in this WA include white-tailed deer and mule deer. Other mammals such as beaver, cottontail rabbits, jackrabbits, mice, ground squirrels, badgers, porcupine, and bats also inhabit the area. Predators observed in this WA include the red fox, coyote, turkey vultures, great horned owls, and various hawks. Songbirds common to this area of ND also inhabit this WA. This reach of Lake Sakakawea is one of the best for the walleye, sauger, and northern pike fisheries. At non-drought lake elevations, shallow backwater bays that are not cut off from the main lake are outstanding breeding and rearing grounds for northern pike. Killdeer, seagulls, sandpipers and other shorebirds are often observed in and around the sandy shoreline habitats. Interior least terns and piping plovers are known to nest along the sandy shorelines in this WA.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Day use activities include hunting, hiking, and shore fishing. Boat fishing occurs in Lake Sakakawea and inlets adjacent to the WA.

Other Important Past Management Activities. This WA includes a number of grazing, agricultural, and haying leases.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;

- Plant shoreline vegetation if needed to control erosion;
- Fence woody draws if needed to increase vegetative quality and value to wildlife;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.72. LAKESHORE NEAR LITTLE KNIFE COTTAGE SITE**

**MANAGEMENT UNIT: 079**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Little Knife Cottage Site is shown on Sheet 15 (of 22) in Appendix A. It is located on the Rat Lake SE USGS topographic map, in Sections 1 and 12, T152N, R93W, in Mountrail County, North Dakota (ND). The MU is located on the southeast shore of Little Knife Bay and approximately three miles to the southeast of New Town, ND. The area is accessed by 1.5 miles of graveled county road. The MU contains approximately 6.38 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of rolling prairie with steep cliffs that descends to the shoreline. The dominant soil type is Cabbo/Shambo: shallow (supporting only light vegetation), silty (wind erodible) soils with moderate permeability, which helps prevent slumping or runoff. The National Wetlands Inventory classified three wetland areas on the east side. These areas do not have consolidated bottoms and are intermittently seasonally flooded.

Vegetation. Vegetation in the area includes an upland grassland ecosystem dominated by a mixture of cool and warm season grasses. Small woody draws contain woody plant species including green ash, chokecherry, buck brush, and a few junipers. There is 1/3 of an acre of Canada thistle west of Lot 1. The thistle has been a long-time irritant to the cottage owners as the seed down blows directly on their nearby properties. All private lots have undergone extensive landscaping with numerous domestic plantings including thick irrigated lawns, flower gardens, and spruce trees that are over 30 feet tall.

Fish and Wildlife. Little Knife Bay provides some of the better walleye fishing on the lake. Killdeer, seagulls, sandpipers, songbirds, and other shorebirds are often observed near the shoreline. The MU is also used by deer, beavers, mice, cottontail rabbits, and bats.

Visitation. The Corps does not record visitation for this area.

Recreation. Water-based activities including boating, swimming, and fishing are the major recreational activities at the lakeshore area near Little Knife Cottage Site. Recreational use by the

general public is limited by a single gravel access road with no designated parking. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. This area is one of ten originally-approved cottage site areas. The high water of 1997 eroded away most of the Corps waterfront property and some private property on 10 of the 19 waterfront lots. The most extensive damage was to lot 17, with approximately 50 feet of this lot eroded away.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote soil conservation, water quality, and public safety by facilitating control of shoreline erosion where problems exist;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Facilitate control of shoreline erosion where problems exist;
- Control noxious weeds.

### **7.73. LITTLE KNIFE LOW-DENSITY RECREATION AREA      MANAGEMENT UNIT (MU): 080**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Knife Low-Density Recreation Area is shown on Sheet 15 (of 22) in Appendix A. It is located on the Rat Lake SE USGS topographic map, in the SE ¼ of Section 32, T153N, R92W; and the S ½ of Section 32 and the SE ¼ of Section 31, T153N, R92W, in Mountrail County, North Dakota (ND). The MU is located approximately 4 miles northwest of New Town, ND. It is accessed from ND Highway 1804, which runs along the northern boundary of the MU. The MU contains approximately 130.01 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Little Knife Low-Density Recreation Area is gently to moderately rolling slopes. Dominant soil types in the area include Shambo loam (1 to 6 percent slopes), Zahl-Williams loams (9 to 25 percent slopes), Wabek loam (1 to 35 percent slopes), and Cabba-Shambo-Arikara complex (6 to 75 percent slopes). These soils are well drained to excessively drained, with medium to very rapid runoff. The Cabba-Shambo-Arikara complex has a severe water erosion hazard. Shoreline erosion may be a problem, except during drought conditions when lake levels are low.

Vegetation. Short to medium-height mixed native prairie grasses and forbs are found in this MU. Degradation to some of the vegetation has occurred from years of off-road vehicle (ORV) traffic, bonfires, and littering. Several deep ORV trails/roads and bonfire pits are scarred into the soil.

Fish and Wildlife. This reach of Lake Sakakawea is one of the best for the walleye and sauger fisheries. Small mammals such as cottontail and jack rabbits, mice, ground squirrels, badgers and porcupine inhabit the area. Predators observed in the area include the red fox, coyote, turkey vultures, great horned owls and various hawks. Songbirds are also found here. Wildlife abundance is minimal due to heavy human disturbance.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. This area offers opportunities for primitive camping and day use, but no facilities. Major day use activities include hunting, shoreline fishing, and picnicking. Signage and facilities will focus recreation use into resource-compatible sites.

Other Important Past Management Activities. This area was a low-density recreation area in the 1978 Master Plan. The Corps installed no facilities and informally reclassified it for vegetative management. The area was abused for many years as a site for parties with up to 250 attendees. Family primitive camping has been rare due to these problems.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities;
- Provide facilities for family and group day use activities and primitive camping at sites that do not adversely impact cultural resources;
- Provide separation of day use and primitive camping areas;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide access and circulation roads and parking areas;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Develop an access road and parking areas;
- Install at least one vault toilet that meets Americans with Disabilities Act standards;
- Use signage to delineate a primitive camping area separated from day use areas;
- Install picnic facilities for use by families and groups;
- Construct a boat ramp with dock;
- Provide separation between day use and primitive camping areas;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Install regulatory signage to identify activities that are acceptable and those that are prohibited (including ORV use); and to foster cultural resources protection;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Establish additional tree cover for shade and screening between the primitive camping area and day use areas;
- Plant trees, shrubs, and native grasses for shade, wildlife food supply and habitat, and enhanced views;
- Control noxious weeds.

#### **7.74. WHITE EARTH BAY WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 081**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The White Earth Bay WA is shown on Sheet 16 (of 22) in Appendix A. It is located on the Rat Lake SW USGS topographic map, in Section 5, the SE ¼ of Section 6, and the NW ¼ of Section 8, T153N, R93W, in Mountrail County, North Dakota (ND). The MU is located approximately 2 miles southeast of White Earth Bay. The WA is accessed from ND Highway 1804 by gravel roads about 2 miles long. The WA contains approximately 512.43 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the White Earth Bay WA is moderately to steeply sloping slopes. Dominant soil types include Cherry-Cabba complex (9 to 60 percent slopes), Cabba-Badland complex (9 to 70 percent slopes), and Badland-Cabba complex (9 to 70 percent slopes). All are well drained soils with very rapid runoff and a severe water erosion hazard.

Vegetation. Most vegetation in this WA consists of short to medium-height native grasses mixed with shrubs. Some badlands areas with slopes greater than 60 percent lack vegetation and have exposed soil. Wooded areas are dominant in the canyons and coulees of the WA. Junipers grow readily outside the woody draws on steep slopes up to 60 percent.

Fish and Wildlife. Big game found in this WA includes white-tailed deer and mule deer. Other mammals such as cottontail rabbits, jackrabbits, mice, ground squirrels, badgers, and porcupine also inhabit the area. Predators found in this WA include the red fox, coyote, turkey vultures, great horned owls, and various hawks. Songbirds common to this area of ND also inhabit the WA. This reach of Lake Sakakawea is one of the best for the walleye, sauger, and northern pike fisheries. At non-drought lake elevations, a shallow backwater bay contains breeding and rearing grounds for northern pike. Shorebirds are found in and around the sandy shoreline.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Day use activities include hunting and hiking. Boat fishing occurs in Lake Sakakawea adjacent to the WA.

Other Important Past Management Activities. This WA was designated for wildlife management in the 1978 Master Plan and in the General Plan.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;

- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.75. WHITE EARTH BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 082**

Land Classification. Recreation

Managing Agency. Mountrail County Park Board

Location. The White Earth Bay Recreation Area is shown on Sheet 16 (of 22) in Appendix A. It is located on the Rat Lake SW and Charlson NE USGS topographic maps, in Sections 26 and 35, T154N, R94W, in Mountrail County, North Dakota (ND). The MU is located on the tip of the west shore peninsula at the entrance to White Earth Bay and contains approximately 82.69 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). Access to the MU is by 10 miles of gravel road exiting from ND Highway 1804 near the Williams-Mountrail County line.

Topography and Soils. Most of the White Earth Bay Recreation Area is situated on a relatively flat bench that rises to the northwest away from the peninsula's point. Shoreline cliffs are as high

as 100 feet. Soils in this area are loamy Webek, a relatively deep loamy top layer with an underlying permeable sandy substrate.

Vegetation. This area consists of a lowland/terrace grassland ecosystem dominated by grasses. The most abundant grass is crested wheatgrass. Numerous trees have been planted in the MU by a group of White Earth cottage owners in cooperation with the Corps. Most of the plantings were in the vicinity of the recreation facilities.

Fish and Wildlife. The threatened piping plover uses the peninsula beaches for nesting and rearing. Other shorebirds include killdeer, gulls, and sandpipers. White-tailed deer and songbirds common to this part of North Dakota inhabit the MU. This reach of Lake Sakakawea and White Earth Bay provides outstanding fishing for walleye, sauger, and northern pike.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	12,251	2001	11,169
1996	12,922	2002	10,071
1997	12,206	2003	9,531
1998	11,248	2004	9,770
1999	10,947	2005	6,455
2000	11,308	2006	8,020

Recreation. This recreation area is operated by a concessionaire for camping and day use. This MU receives heavy traffic associated with fishing, boating, and weekend camping, with most of the use occurring during June, July, and August. Other recreation activities include hiking, swimming, sun-bathing and waterskiing. The concessionaire operates a developed campground with 25 campsites, 12 of which have 30-amp electric hookups. The campground also has picnic tables and fire rings. Other facilities at this recreation area include a concession building that sells bait and camping supplies, a snack bar, a maintenance shop, a dump station, a picnic shelter, a fish cleaning station, and vault toilets. The area also has two boat ramps, a boat fueling station, and boat docks.

Other Important Past Management Activities. About 16 acres of the MU along the peninsula's point was leased out to the Mountrail County Park Board for recreation in 1982. The remaining 65 acres in the MU are located inland, behind a 59-acre "island" of privately owned cottage sites/lots, called the White Earth Cottage Site, which is surrounded by Corps public lands. There is a sub-lease to the ND Game and Fish Department for a fish culture facility in this MU.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;



- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Increase enjoyment of recreation activities by excluding cattle from the recreation area;
- Improve existing access and circulation roads and parking areas;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Update existing buildings;
- Update store equipment;
- Install boat/trailer storage facilities;
- Install sports equipment and facilities;
- Install cement RV parking pads;
- Add and improve designated access routes for the west area;
- Add additional pedestrian signage for the park;
- Upgrade signs within the park;
- Add additional park tables;
- Add additional covered tables, pavilion, and larger handicap access covers;
- Add 2 vault toilets at the far west end of the park;
- Install access to all toilet facilities that meets Americans with Disabilities Act (ADA) standards;
- Improve access to all areas of the park to meet ADA standards;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Update and improve adverse weather early warning equipment;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds.

## **7.76. LITTLE BEAVER WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 083**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Beaver Wildlife Area (WA) is shown on Sheet 16 (of 22) in Appendix A. It is located on the Charlson NE USGS topographic map, in Section 24, T154N, R95W, Williams County, North Dakota (ND), and in Sections 19 and 20, T154N, R94W, Mountrail County, ND. The WA is located along the north shore of Lake Sakakawea and extends from 0.25 mile to 2 miles east of Little Beaver Creek Bay. The WA has no public vehicular access but can be accessed by boat or by foot from the adjacent Little Beaver Bay Recreation Area or from ND Highway 1804 by an unpaved road about 4 miles long and then walking up to 1 mile. The WA contains approximately 367.71 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Little Beaver WA consists of gently to steeply sloping uplands. Soil types in this WA include Cabba-Badland, outcrop complex (9 to 70 percent slopes), Zahl-Williams-Bowbells loams (3 to 9 percent slopes), Cherry-Cabba complex (9 to 60 percent slopes), Badland-Cabba complex (9 to 70 percent slopes), and Cabba-Badland complex (9 to 70 percent slopes). All of these soil types are well drained.

Vegetation. The most abundant vegetation in the WA consists of species of wheatgrass that can survive in drier habitats. Wooded areas with deciduous tree species common to ND are predominant in the coulees.

Fish and Wildlife. Mammals and songbirds common to this part of ND inhabit this WA. Many shorebirds, including killdeer, gulls, and sandpipers, are found along the beaches. Raptors observed in the WA include hawks, turkey vultures, and owls. This reach of Lake Sakakawea is an outstanding fishery for walleye, sauger and northern pike.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreation activities in this WA include fishing, hunting and hiking. The badlands topography and lack of vehicular access greatly reduce the number of visitors, resulting in minimal disturbance to wildlife.

Other Important Past Management Activities. This area was designated for wildlife management in the 1978 Master Plan and the General Plan.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;

- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.77. LITTLE BEAVER BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 084**

Land Classification. Recreation

Managing Agency. Williams County Water Resources District

Location. The Little Beaver Bay Recreation Area is shown on Sheets 16 and 17 (of 22) in Appendix A. It is located on the Charlson NE USGS topographic map in Sections 11, 13, 14, & 23 of T154N, R95W, in Williams County, North Dakota (ND). The MU is located 33 miles east of Williston, ND on the north shore of the lake and is accessed from ND Highway 1804 by 3 miles of gravel road. The MU contains approximately 417.74 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

**Topography and Soils.** The topography of the MU is that of uplands that quickly give way to badlands. The principal soil types are Daglum-Rhoades (0 to 6 percent slopes), Cherry loam (0 to 6 percent slopes), Cabba-Badland complex (9 to 70 percent slopes), Badland loam (9 to 25 percent slopes), Amor-Zahl-Cabba loams (9 to 25 percent slopes), and Farland silt loam (0 to 6 percent slopes).

**Vegetation.** Vegetation in the upland areas is dominated by short- and mid-grass native prairie species and introduced grass species. The draws are fairly heavily wooded with numerous short and mid-sized hardwood shrubs and trees. Some Rocky Mountain juniper exists on the badlands portions.

**Fish and Wildlife.** A wide variety of wildlife species are found in the MU. Killdeer, seagulls, sandpipers and other shorebirds are often observed in and around the shoreline habitats. Numerous songbirds typical of this part of ND also inhabit the area. Various mammals habituating the area include mule and white-tailed deer, beaver, mice, rabbits, and bats. The remainder of the wildlife within this area is typical of this part of ND.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	2,163	2001	1,452
1996	2,112	2002	3,643
1997	2,623	2003	3,578
1998	2,398	2004	3,563
1999	1,347	2005	2,616
2000	1,401	2006	3,794

**Recreation.** This MU is relatively remote, but Little Beaver Creek Road provides access from the recreation area to residential development that has recently occurred on lands adjacent to the MU. Recreational activities include camping, boating, fishing, and picnicking. Facilities include a campground with 41 gravel pads (17 of which have electric hookups), one old and 2 new concrete boat ramps, courtesy docks, 2 group picnic shelters with picnic tables and grills, 8 picnic sites with table and grill/fire ring, portable toilets, a dumpster, wheel stops, signage, and potable water. The Williams County Water Resources District has developed a new road with right-of-way fencing, and a gravel access road to the boat ramp.

**Other Important Past Management Activities.** The concrete boat ramp was extended to provide lake access in 2002 and later years, during low pool elevations resulting from drought. Several homes were constructed on private land adjacent to the recreation area.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;

- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing access and circulation roads and parking areas;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Pave the access road from Highway 1804 and major roads in the recreation area;
- Install fencing along the access road and inside the perimeter of paved parking lots;
- Develop a primitive campground area with gravel circulation roads and pads leading from the west access road;
- Add potable water, a dump station, and electric hookups at the west campground;
- Install concrete pads and surface the roads with gravel in the modern campground;
- Install 4 additional vault toilets near boat ramps and in campgrounds as they are needed;
- Construct a bathhouse/comfort station if an on-site caretaker is available;
- Install a playground near the campgrounds;
- Add 5 picnic shelters in the campground and day use areas;
- Add 20 concrete picnic tables on concrete slabs and 10 fire rings in the campground and day use areas;
- Construct a steel building on concrete slab with kitchen facilities, for use as an event center/pavilion;
- Construct a concession building near the mid-water boat ramp, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Replace the original boat ramp;
- Extend boat ramps as needed, to provide continued lake access;
- Install a fish cleaning station with drain field on the west side of the recreation area;
- Develop an additional well on the west side of the bay with a pressure pump to serve the fish cleaning station;
- Install an interpretive sign near the cultural resources site;
- Install other signs, including signs educating the public regarding prevention of the spread of aquatic nuisance species;
- Construct a fishing pier;
- Construct breakwaters at the low- and mid-water boat ramps for safety and convenience;
- Develop a designated swimming beach, after on-site management is available;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;

- Develop 4-foot-wide dirt hiking trails for access to more remote areas;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.78. LITTLE BEAVER AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 085**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Beaver Agricultural Leases Vegetative Management Unit is shown on Sheet 17 (of 22) in Appendix A. It is located on the Charlson NE and Charlson NW USGS topographic maps in Sections 16 and 21 - 23, T154N, R95W, in Williams County, North Dakota (ND). The MU is located on the north shore of Lake Sakakawea just west of Little Beaver Bay and 33 miles east of Williston, ND. It is accessed by a 3-mile-long road south from ND Highway 1804. The MU contains approximately 228.15 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of uplands that quickly give way to badlands. The principal soil types are Daglum-Rhoades (0-6 percent slopes), Cherry loam (0-6 percent slopes), Cabba-Badland complex (9-70 percent slopes), Badland, Amor-Zahl-Cabba loams (9-25 percent slopes), and Farland silt loam (0-6 percent slopes).

Vegetation. Vegetation in the upland area consists mainly of native and introduced short- to mid-height grasses. The draws are heavily wooded with short- to medium-sized hardwood shrubs and trees. Some Rocky Mountain junipers exist on the badlands.

Fish and Wildlife. The area is used by mule and white-tailed deer, beaver, mice, rabbits, bats, numerous songbirds, and some shorebirds.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in this vegetative management unit are primarily limited to upland bird and big game hunting.

Other Important Past Management Activities. The MU contains a grazing and haying agricultural lease.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.79. UPPER REGION WILDLIFE MANAGEMENT AREAS (WMA'S):**

<b>HOFFLUND WMA</b>	<b>MANAGEMENT UNIT (MU): 086</b>
<b>LEWIS AND CLARK WMA</b>	<b>MANAGEMENT UNIT (MU): 117</b>
<b>TRENTON WMA</b>	<b>MANAGEMENT UNIT (MU): 119</b>
<b>TOBACCO GARDEN WMA</b>	<b>MANAGEMENT UNIT (MU): 128</b>
<b>ANTELOPE CREEK WMA</b>	<b>MANAGEMENT UNIT (MU): 137</b>

Land Classification. Multiple Resource Management: Wildlife Management General

Management Agency. North Dakota Game and Fish Department (NDGFD)  
U.S. Army Corps of Engineers (Corps)

Location. Hofflund and Trenton WMA's are located in Williams County, North Dakota (ND). Hofflund WMA is shown on Sheet 17 (of 22) in Appendix A. It is located 30 miles east of Williston, ND and contains 1,500.3 acres of leased project lands above an elevation of 1850 feet above mean sea level (msl). Trenton WMA is shown on Sheet 22 (of 22) in Appendix A. It is located east of Trenton, ND and contains 6,636.1 acres of leased project lands above and below 1850 feet msl on the left bank (mostly north and west side) of the Missouri River. These WMA's contain approximately 1,234.82 acres and approximately 261.69 acres, respectively, calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet msl.

The Lewis and Clark, Tobacco Garden, and Antelope Creek WMA's are located in McKenzie County, ND. Lewis and Clark WMA is shown on Sheets 20 and 22 (of 22) in Appendix A. It is located southwest of Williston, ND, on the right bank (mostly south and east side) of the Missouri River. It contains 12,151.5 acres of leased project lands above and below 1850 feet msl and approximately 11,967.71 acres (including islands) calculated in ArcView GIS as stated above. Tobacco Garden WMA is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the southwest shore of Tobacco Garden Bay and on the south shore of Lake Sakakawea west of Tobacco Garden Bay. It contains 340.6 acres of leased project lands above 1850 feet msl and approximately 295.82 acres calculated in ArcView GIS as stated above. Antelope Creek WMA is shown on Sheets 15 and 16 (of 22) in Appendix A. It is located about 6 to 9 miles west of the city of New Town, ND. It contains 890.3 acres of leased project lands above 1850 feet msl and approximately 1,383.98 acres calculated in ArcView GIS as stated above, which includes the Charlson/Antelope Creek Agricultural and Oil Leases Wildlife Area managed by the U.S. Army Corps of Engineers (Corps) that was not incorporated into the NDGFD lease at the time this Master Plan/EA was prepared.

Vehicular access to these WMA's is generally by gravel roads of varying lengths. Boat access to these WMA's is provided by ramps at nearby recreation areas.

Topography and Soils. The topography of these WMA's contains mostly flat lowlands and some upland. Soils in the lowlands are deep, nearly level, well to excessively drained, and finely to coarsely textured. The upland topography varies from rolling hills and ridges to uplands divided by moderately to steeply sloped drainage valleys and coulees. Soils on uplands (including terraces and glacial till) are deep, nearly level to rolling, well drained, and medium to moderately fine textured. Erosion from Lake Sakakawea has caused some moderately high cliffs to form along the shoreline in some parts of the WMA's.

Vegetation. The two major vegetation systems of these WMA's are agricultural fields (farmed under cooperative agreements to create food plots for wildlife) and grasslands. Grasslands



include native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Common grasses in the WMA's include crested wheatgrass; however, the soil types will support western wheatgrass, needle and thread, green needle grass, prairie june grass, blue grama, Kentucky bluegrass, Penn sedge, and little bluestem. At the Lewis and Clark, Trenton, and Tobacco Garden WMA's, primary tree species are willows, cottonwoods, green ash, and boxelder; major shrub species are native buffalo berry, snowberry, and plum; and herbaceous cover and grasses include cattails, smooth brome, reed canary grass, alfalfa, small grains, sweet clover, sunflower, corn, millet and native grasses. Hofflund WMA contains 6.2 acres of wetlands, while Trenton WMA contains 586.95 acres of wetlands. Lewis and Clark WMA contains 1,145 acres of wetlands, of which 714 acres are identified as marsh; a Ducks Unlimited project pumps water from the Missouri River in the spring as needed to create/enhance over 100 acres of wetlands. The Tobacco Garden and Antelope Creek WMA's consist mostly of native upland grasses and woody draws. Antelope Creek WMA has several large-scale tree and shrub plantings arranged in block and row patterns that provide food, roosting areas, travel lanes, and escape cover for wildlife. Various species of noxious weeds occur at the five WMA's including Canada thistle, leafy spurge and salt cedar. In addition, Russian olive is a problem at Trenton and Lewis and Clark WMA's.

Fish and Wildlife. Permanent mammalian residents of these five WMA's include white-tailed deer, coyote, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, mink, and many species of rodents. The mule deer and pronghorn antelope are known to frequent the Lewis and Clark, Hofflund, and Tobacco Garden WMA's. Avian species at the five WMA's include turkey, ring-necked pheasant, Hungarian partridge, sharp-tailed grouse, mourning doves, waterfowl, shorebirds, raptors, and songbirds. All five WMA's contain aquatic areas that are used by waterfowl and shorebirds for nesting and brood rearing. At Hofflund WMA, interior least terns and nesting piping plovers have been observed along the shorelines. Interior least terns have also been observed at Lewis and Clark WMA. Antelope Creek WMA provides outstanding walleye, sauger, and northern pike fisheries. Lewis and Clark WMA contains Missouri River backwaters that are known to contain catfish, bullheads, northern pike, yellow perch, burbot, walleye, sauger, goldeye, shovelnose sturgeon, and paddlefish; it also contains habitat that may be suitable for the endangered pallid sturgeon. There are 17 oil wells within Lewis and Clark WMA, 2 at Hofflund WMA, and one at Trenton WMA that generate truck traffic that disrupts wildlife.

Visitation. The Corps does not record visitation for these wildlife management areas.

Recreation. Hunting for big game, upland birds, and/or waterfowl is the primary recreational use for all five WMA's. Other activities include shore fishing, camping, hiking, bird watching, boating, and photography. Off road vehicle travel occurs at Hofflund WMA. There are 4 parking lots with walk-through gates and 2 trails on the east and west side of Hofflund Bay for the public to access Lake Sakakawea for summer and winter fishing. Lewis and Clark WMA is a popular paddlefishing location. Within Lewis and Clark WMA there are 3 picnic shelters with tables; a 400-meter rifle range with 8 benches, 27 parking lots with walk-through gates; vault toilet; a concrete poured boat ramp for river access; and one gravel boat ramp for access to backwaters, ice and summer fishing sites, and paddlefishing access sites. The Big Timber Area is the main fishing access for Trenton WMA. A two-track trail provides for land-based access to Antelope Creek WMA.

Cultural Resources. Prior to any future development at or near these wildlife management areas, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Other Important Past Management Activities. The Lewis and Clark WMA contains agricultural, haying, and grazing leases. In 1991 the Corps and NDGFD combined with Ducks Unlimited to construct a series of waterfowl projects in the Lewis and Clark WMA. The Trenton WMA and Tobacco Garden WMA were used for grazing cattle before being licensed to NDGFD for wildlife management. In 1995 the NDGFD turned back to the Corps the management of: 1) the Sand Creek Bay portion of Tobacco Garden WMA due to difficulties regulating grazing in the area; and 2) the southern half of the southern section of Antelope Creek WMA due to encroachments by the adjacent landowner regarding structures and winter grazing. The northern and southern portions of MU 137 are leased to NDGFD for the Antelope Creek WMA, and the Corps manages the middle portion as a Wildlife Area; activities and development are coordinated between the two agencies to assure wildlife benefits are maximized.

Resource Objectives. Site-specific resource objectives for these wildlife management areas include the following, not in priority order:

- Manage wildlife and fishery resources to support propagation of the species;
- Encourage hunting and related outdoor recreation opportunities;
- Permit compatible outdoor recreation;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation and interpretation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Protect, conserve, and/or improve habitat for a variety of wildlife species, including threatened and endangered species;
- Reduce disturbance to wildlife, reduce destruction of habitat, and improve quality of hunting and wildlife observation by controlling vehicle use;
- Maintain and improve the quality and diversity of vegetative resources to provide food and cover for a variety of wildlife species;
- Promote ecological diversity by increasing wetland habitat quantity and quality for a variety of fish and wildlife species, including resident and migratory waterfowl;
- Promote water quality and reduce erosion by stabilizing the shoreline if needed;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for these wildlife management areas include the following (not in priority order), many of which are detailed in the management plan, grassland management plan, and/or cropland management plan for each WMA:

- Continue restricted vehicle areas through signage and/or fencing to reduce disturbance to wildlife, reduce destruction of habitat, and improve quality of hunting and wildlife observation;
- Construct or improve trails as needed to improve access and control vehicle traffic;
- Improve the road to Big Timber fishing area in Trenton WMA;
- Build a boundary fence and interior fence in the Big Timber area of Trenton WMA;
- Install a shooter's preparation shelter and bench at the rifle range in Lewis and Clark WMA;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Enhance fishing access sites in Lewis and Clark WMA;
- Provide other needed facilities for outdoor recreation activities related to fish and wildlife;
- Plant trees, shrubs, and native/marsh grasses for wildlife habitat and food supply;
- Continue cropping to provide food plots for wintering wildlife;

- Improve wildlife habitat by limiting crop acreage, planting some croplands with herbaceous cover at Lewis and Clark WMA;
- Provide grasslands with tall residual cover for upland game bird and waterfowl nesting, and to maximize fall hunting opportunities;
- Utilize grazing to reduce grass litter accumulation of planted dense nesting cover fields in Hofflund WMA;
- Increase grassland quality by periodic burning, grazing, and/or haying, based on best available methods in accordance with the grassland management plan for each WMA;
- Continue to vary the grazing regime based on water source availability for livestock in Hofflund WMA;
- Rejuvenate grasses and forbs by rotational haying;
- Control noxious weeds, especially leafy spurge, Canada thistle, and salt cedar;
- Reduce invasion of Russian olive, especially at Trenton and Lewis and Clark WMA's;
- Provide appropriate protection for any cultural resources;
- Continue maintaining facilities that ensure adequate irrigation flow-through and limit flooding at Erikson Island in Trenton WMA;
- Continue to operate and maintain facilities for managing water levels to enhance waterfowl habitat in Lewis and Clark WMA;
- Coordinate with the Corps on oil well development, placement, and monitoring within Lewis and Clark WMA;
- Coordinate reclamation of abandoned oil well sites in the Lewis and Clark and Hofflund WMA's;
- Coordinate placement of required mitigation if the proposed Bertrand #1-5 oil well is drilled in Lewis and Clark WMA;
- Survey the actual boundary lines of Antelope Creek WMA.

#### **7.80. HOFFLUND BAY GRASSLANDS**

**MANAGEMENT UNIT (MU): 087**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Hofflund Bay Grasslands MU is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Red Mike Hill USGS topographic map in Sections 13, 23, and 24, T153N, R97W; and Sections 18 and 19, T154N, R96W, in Williams County, North Dakota (ND). The MU is 30 miles east of Williston, ND and is accessed by approximately 3 miles of graveled county roads from ND Highway 1804. The MU contains approximately 201.81 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of uplands and rolling hills. The soils include Lihen-Blanchard loamy fine sands (3 to 15 percent slopes) and Wabek sandy loam (0 to 6 percent slopes).

Vegetation. Vegetation in the area consists mainly of native and introduced short- to mid-grass species. Some trees and shrubs are located in the coulees.

Fish and Wildlife. Songbirds, upland game birds, rodents, rabbits, and other small mammals are the primary wildlife residents of the MU. Transient species include white-tailed and mule deer, coyote, fox, and waterfowl and shorebirds along the shoreline.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in the Hofflund Bay Grasslands are limited. Activities include occasional off-road vehicle (ORV) use and some fishing and boating on the lake adjacent to the MU.

Other Important Past Management Activities. A 25-acre agricultural lease is located in this MU.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively manage grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;

- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

### 7.81. LITTLE EGYPT RECREATION AREA

**MANAGEMENT UNIT (MU): 088**

Land Classification. Recreation

Managing Agency. Williams County Park Board

Location. The Little Egypt Recreation Area is shown on Sheet 17 (of 22) in Appendix A. It is located on the Red Mike Hill USGS topographic map, in Sections 15, 16, and 20 of T154N, R96W, in Williams County, North Dakota (ND). It is located on the northern shore of Lake Sakakawea 2 miles south of ND Highway 1804 and 26 miles east of Williston, ND. The MU contains approximately 164.90 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by 2 miles of scoria-surfaced road leading south from ND Highway 1804.

Topography and Soils. The topography in the Little Egypt Public Use Area consists of gently rolling, sandy hills. The primary soils are Zahl-Williams loams (15 to 60 percent slopes), Lihen loamy fine sand (0 to 6 percent slopes), and Bowdle loam (0 to 3 percent slopes).

Vegetation. Vegetation consists of native and introduced short- and mixed-grass prairie species, with some native shrubs and trees. A variety of trees have been planted for aesthetics, shade, and wildlife.

Fish and Wildlife. Shorebirds, songbirds, rodents, rabbits, and other small mammals are the primary residents of the MU. Transient species include white-tailed deer, coyotes, foxes, hawks, owls, and waterfowl. The threatened piping plover nests on the area's beaches.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	4,206	2001	2,588
1996	4,080	2002	2,127
1997	3,657	2003	2,111
1998	3,348	2004	1,270
1999	2,287	2005	1,298
2000	6,724	2006	1,410

Recreation. This area is operated for primitive camping and day use. It has a swimming beach in the finest natural beach area on Lake Sakakawea. Activities in at this MU include swimming, sunbathing, picnicking, camping, and hiking. Facilities include 2 picnic shelters, 4 picnic tables, and vault toilets.

Other Important Past Management Activities. This area was previously managed for grasslands (vegetative) management by the Corps. The land classification of this area was changed to Recreation by Master Plan Supplement 6, approved in December 1989, which established the recreation area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following:

- Provide additional recreation facilities as needed to meet public demand;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Reestablish native vegetation to enhance views and provide shade.

## **7.82. LAKESHORE NEAR RED MIKE CABIN AREA**

**MANAGEMENT UNIT (MU): 089**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Lakeshore near Red Mike Cabin Area is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Red Mike Hill USGS topographic map in Section 19, T154N, R96W, in Williams County, North Dakota (ND). The MU is 30 miles east of Williston, ND and is accessed by approximately 3 miles of graveled county roads from ND Highway 1804. The MU contains approximately 22.35 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of uplands and rolling hills. The soils include Lihen-Blanchard loamy fine sands (3 to 15 percent slopes) and Wabek sandy loam (0 to 6 percent slopes).

Vegetation. Vegetation in the area consists mainly of native and introduced short- to mid-grass species. Some trees and shrubs are located in the coulees.

Fish and Wildlife. Songbirds, upland game birds, rodents, rabbits, and other small mammals are the primary wildlife residents of the MU. Transient species include white-tailed and mule deer, coyote, fox, and waterfowl and shorebirds along the shoreline.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. Recreational activities in the Lakeshore near Red Mike Cabin area are limited. Activities include some fishing and boating on the lake adjacent to the MU.

Other Important Past Management Activities. Visitation to this area is primarily from the adjacent cabin area.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Control noxious weeds.

### 7.83. LAKESHORE NEAR KEYS COVE SUBDIVISION

MANAGEMENT UNIT (MU): 090

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Keys Cove Subdivision is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map, in Sections 14 and 15, T154N, R97W, in Williams County, North Dakota (ND). The MU is located on the eastern and northern shore of White Tail Bay. The MU is accessed from ND Highway 1804 by a private gravel road less than 0.5 miles long that passes through Keys Cove Subdivision and becomes a gravel/dirt trail in the MU. The MU contains approximately 105.89 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently rolling slopes. Dominant soil types include Amor-Williams-Zahl loams (3 to 9 percent slopes), Amor-Zahl-Cabba loams (9 to 25 percent slopes), and Wabek sandy loam (6 to 25 percent slopes). Amor-Williams-Zahl loams and Amor-Zahl-Cabba loams are well drained soils, and Wabek sandy loam is excessively drained soil.

Vegetation. The vegetation consists of short to mid-sized native and introduced grass species, with native shrubs and trees in the coulees. Numerous elm, ash, and cottonwood trees have been planted on the MU.

Fish and Wildlife. Songbirds, upland game birds, rodents, rabbits, and other small mammals are the primary residents of the MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Keys Cove Subdivision, with occasional shoreline fishing and some off-road vehicle (ORV) use. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Homes other than those in Keys Cove have been developed adjacent to this MU. Increased patrolling has traditionally been implemented to control ORV use.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;



- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.84. WHITETAIL BAY RECREATION AREA (LUND'S LANDING)**

**MGT. UNIT (MU): 091**

Land Classification. Recreation

Managing Agency. Williams County Water Resources District

Location. The Whitetail Bay Recreation Area is shown on Sheet 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map, in Section 15 of T154N, R97W, in Williams County, North Dakota (ND). It is located on the western shore of White Tail Bay, 22 miles east of Williston, ND. Access is by a gravel road about 0.25 miles long from ND Highway 1804. The MU contains approximately 33.16 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of this recreation area consists of gently to moderately rolling hills sloping down to the shoreline. Dominant soil types include Lehr loam (0 to 6 percent slopes), which is somewhat excessively drained, and Wabek sandy loam (6 to 25 percent slopes), which is excessively drained.

Vegetation. Vegetation consists of short to mid-sized native and introduced grass species, with native shrubs and trees in the coulees. Several ornamental trees and shrubs have been planted around the concession facilities.

**Fish and Wildlife.** Songbirds, rodents, rabbits, and other small mammals are found in the MU. A substantial number of western mountain bluebirds use artificial nesting structures in the area. There is an excellent fishery adjacent to the MU, providing some of the best walleye, sauger, saugeye, and northern pike fishing on Lake Sakakawea.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	10,196	2001	11,088
1996	11,672	2002	10,354
1997	10,071	2003	9,303
1998	8,765	2004	7,080
1999	8,131	2005	5,548
2000	9,886	2006	5,577

**Recreation.** A third-party concessionaire operates the recreation area for camping and day use. This area receives recreational use year-round. Activities include boating, fishing, ice fishing, birdwatching, camping, hiking, and picnicking. Facilities at this MU include a lodge, a restaurant, a concession building with flush toilets and showers, 4 rental cabins, a primitive campground, 6 picnic sites with tables and fire rings, vault toilets, and a maintenance shop. Facilities for boat access include a high and low water boat ramp, a marina, boat refueling, boat rentals, boat docks, and two parking areas. A Lewis and Clark Legacy Trail was completed with U.S. Department of Transportation cost-shared funding in 2006; this loop gravel trail is 0.5 miles long and provides a stunning view of Lake Sakakawea and the surrounding bluffs.

**Other Important Past Management Activities.** The MU was leased to the Williams County Water Resources District in 1984. The recreation area was operated by a third-party concessionaire, Jim Torgerson, at the time this Master Plan/EA was prepared.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use from camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Improve existing access and circulation roads and parking areas;
- Provide opportunities to explain and/or interpret the regional and local history and cultures of the Three Affiliated Tribes;

- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Install a floating courtesy dock for the high water/cement boat ramp;
- Construct a walkway to the floating courtesy dock at the high water boat ramp;
- Install a courtesy dock for the low water ramp;
- Extend the cement apron on the low water boat ramp;
- Install refueling facilities for amphibious airplanes;
- Construct a 60' x 150' marine service center "shop," if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Construct a fish cleaning station;
- Develop any support facilities needed for conduct of ice fishing as a commercial enterprise;
- Construct a 300' x 6' retaining wall above Lake Sakakawea and below Lund's Landing Lodge;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Construct a new entrance to the recreation area;
- Asphalt the entrance road from Highway 1804;
- Asphalt the entire lower level parking area including the outdoor toilet and handicapped-accessible parking area;
- Asphalt the Marine Service Center parking lot;
- Asphalt the upper level recreational vehicle (RV) camping area;
- Construct shower/laundry/toilet facilities in the upper level RV camping area;
- Increase the size/capacity of the existing RV camping area if needed to meet public demand;
- Install 2 yard lights at the RV camping area;
- Develop a new 14-unit RV camping area including electric hookups and sewage disposal;
- Add 3 hot tubs to the lodge facility;
- Remodel and expand the lodge kitchen if needed to accommodate increased visitation;
- Add up to 3 modern rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Add another tipi;
- Develop any support facilities needed for an Amtrak "Walleye Express" service;
- Construct a conference center with asphalt road access to accommodate regional corporate and family outings, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Landscape the area around the new conference center;
- Construct a "Country Fence";
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Plant 130 new evergreen trees;

- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.85. LAKESHORE NEAR PARADISE POINT SUBDIVISION      MANAGEMENT UNIT (MU): 092**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Paradise Point Subdivision is shown on Sheet 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map, in the SE ¼ of Section 15, T154N, R97W, in Williams County, North Dakota (ND). The MU is located on the western side of White Tail Bay. It is accessed from ND Highway 1804 by a private gravel road about 1 mile long that passes through Paradise Point Subdivision and becomes a gravel/dirt trail in the MU. The MU contains approximately 17.97 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently to moderately rolling slopes. Dominant soil types include Lehr loam (0 to 6 percent slopes), which is somewhat excessively drained, and Wabek sandy loam (6 to 25 percent slopes), which is excessively drained.

Vegetation. The vegetation consists of short to mid-sized native and introduced grass species, with native shrubs and trees in the coulees. Numerous elm, ash, and cottonwood trees have been planted on the MU.

Fish and Wildlife. Songbirds, upland game birds, rodents, rabbits, and other small mammals are the primary residents of the MU.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Paradise Point Subdivision, with occasional shoreline fishing and some off-road vehicle (ORV) use. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. This MU previously included the Corps public lands along the shore to the southwest, where several holes of the golf course operated by the Paradise Point Association were developed. Increased patrolling has traditionally been the method implemented to control ORV use.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.86. PARADISE POINT GOLF COURSE**

**MANAGEMENT UNIT (MU): 093**

Land Classification. Recreation

Managing Agency. Williams County Water Resources District

Location. The Paradise Point Golf Course is shown on Sheet 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map, in the S 1/2 of Section 15, T154N, R97W, in Williams County, North Dakota (ND). The MU is located on the southwestern shore of White Tail Bay. It is accessed from ND Highway 1804 by a private gravel road less than 0.5 miles long and thence by golf cart paths. The MU contains approximately 25.64 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently rolling slopes. Dominant soil types include Lehr loam (0 to 6 percent slopes), which is somewhat excessively drained, and Wabek sandy loam (6 to 25 percent slopes), which is excessively drained.

Vegetation. The vegetation consists of short to midsized native and introduced grass species, with native shrubs and trees in the coulees. Numerous elm, ash, and cottonwood trees have been planted, some in rows, on the MU.

Fish and Wildlife. Songbirds, upland game birds, rodents, rabbits, and other small mammals are the primary residents of the MU.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this MU.

Recreation. This golf course is operated and maintained by a third-party lessee. Golfing is the major recreational activity at this MU, with occasional shoreline fishing, hiking, and bird watching. Six holes of the golf course are located in the MU.

Other Important Past Management Activities. The Paradise Point Association was the third-party lessee operating the golf course at the time this Master Plan/EA was prepared. Prior to the development of the golf course, this area was part of the MU that is currently referred to as the Lakeshore near Paradise Point Subdivision and was formerly referred to as the Lakeshore near White Tail Bay Subdivision. A retention pond was excavated along a creek to provide water for the golf course but was not adequate to supply enough water during drought conditions. The Paradise Point Association applied to the State Water Board to drill test wells into the Hofflund Aquifer on Corps land across the bay from the golf course to obtain adequate water.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Provide high-quality golfing opportunities consistent with visitor safety;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Provide additional golf course support facilities as needed;
- Develop a water supply source adequate for golf course irrigation during periods of drought;
- Provide appropriate protection for any cultural resources;
- Provide vegetative cover that enhances activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;

- Improve shoreline accessibility in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Control noxious weeds.

## **7.87. WHITE TAIL BAY AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 094**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The White Tail Bay Agricultural Leases MU is shown on Sheet 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map, in the SE ¼ of Section 16, Section 20, the NE ¼ of Section 21, and the NW ¼ of Section 22, T154N, R97W, Williams County, North Dakota (ND). The MU is located less than 2 miles west of White Tail Bay. It is accessed by a road 2 miles long from ND Highway 1804. The MU contains approximately 126.83 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the White Tail Bay Agricultural Leases ranges from gently to steeply sloping uplands. Upland areas give way to badlands away from the shore. Dominant soil types include Williams-Zahl loams (6 to 9 percent slopes), Cabba-Badland outcrop complex (9 to 70 percent slopes) and Amor-Zahl-Cabba loams (9 to 25 percent slopes). Both are well drained soils.

Vegetation. The vegetation mainly consists of short to midsized native and introduced grass species. Native shrubs and trees are found in the coulees. Rocky Mountain juniper is found in the badlands portion of the MU.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the MU. Mule deer, white-tailed deer, coyotes, foxes, hawks, and owls are transient users of the MU.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Boat fishing and boating are done off shore from the MU. Some upland and big game hunting may also occur in the MU. Some off-road vehicle (ORV) use also occurs in the MU.

Other Important Past Management Activities. The MU contains leases for livestock grazing.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.88. WILLISTON WEEKEND TRAINING SITE**

**MANAGEMENT UNIT (MU): 095**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. North Dakota National Guard

Location. The Williston Weekend Training Site is shown on Sheet 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map, in the SW ¼ of Section 16 and in Section 21, T154N, R97W, in Williams County, North Dakota (ND).

The MU is located approximately 1 mile west of White Tail Bay and about 20 miles east of Williston, ND. It is accessed from ND Highway 1804 by a 2-lane gravel road 2 miles long. There is a gravel entrance trail to the MU. The MU contains approximately 227.50 acres of



project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Williston Weekend Training Site ranges from moderate to steep slopes characteristic of badlands terrain. Dominant soil types include Cabba-Badland outcrop complex (9 to 70 percent slopes) and Amor-Zahl-Cabba loams (9 to 25 percent slopes). Both are well drained soils.

Vegetation. The vegetation consists of native and introduced short grass to mixed grass species, with native shrubs and trees in the coulees. Rocky Mountain juniper grows in the badlands.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the MU. Mule deer, white-tailed deer, coyotes, foxes, hawks, and owls are transient users of the MU.

Visitation. The U.S. Army Corps of Engineers does not record visitation for this MU.

Recreation. This MU is maintained as an undeveloped, primitive training site for units of the North Dakota Army National Guard. Facilities at this MU include storage buildings and primitive housing.

Other Important Past Management Activities. This MU was classified as a low-density recreation area in the 1978 Master Plan, with the ND National Guard as the managing agency. It was unofficially designated as a vegetative management area by the Corps prior to the preparation of the 1996 Operational Management Plan because the MU is used as a livestock range by the Nesson Valley Grazing Association in addition to being a ND National Guard training site.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this area include the following, not in priority order:

- Provide an area adequate for ND National Guard training activities consistent with conservation of natural resources;
- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this area include the following, not in priority order:

- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Repair the concrete culvert at the stream crossing;
- Remove the rope bridge and zip line;
- Restore areas where soil has been disturbed by training activities, using fill, grading, and seeding;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.89. LEWIS AND CLARK WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 096**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Lewis and Clark Wildlife Area (WA) is shown on Sheet 18 (of 22) in Appendix A. It is located on the Cussicks Spring USGS topographic map in Section 25, T154N, R98W, and Sections 19 and 30, T154N, R97W, in Williams County, North Dakota (ND). The WA is located on the northern shore of Lake Sakakawea and just northeast of Lewis and Clark State Park. The WA is about 19 miles east of Williston, ND and is accessed from ND Highway 1804 by a road approximately 3 miles long. The WA contains approximately 284.67 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the WA ranges from rolling hills to badlands terrain. The primary soils are Amor-Williams-Zahl loams (3 to 9 percent slopes), Amor-Zahl-Cabba loams (9 to 25 percent slopes), Cabba-Badland outcrop complex (9 to 70 percent slopes), and Shambo loam (0 to 3 percent slopes).

Vegetation. Vegetation in the WA consists of native and introduced short and mid-height grasses, with native shrubs and trees in the coulees. Rocky Mountain juniper is located in the badlands portion of the WA.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the WA. Mule and white-tailed deer, coyote, fox, hawks, and owls are transient users of the WA.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the WA include upland and big game hunting. Some offshore boating and fishing also occurs in the WA.

Other Important Past Management Activities. The WA has had leases for livestock grazing.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Actively monitor any grazing or agricultural use to improve the habitat for wildlife;
- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;

- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.90. LEWIS AND CLARK STATE PARK**

**MANAGEMENT UNIT (MU): 097**

Land Classification. Recreation

Managing Agency. North Dakota Parks and Recreation Department (NDPRD)

Location. Lewis and Clark State Park (SP) is shown on Sheet 18 (of 22) In Appendix A. It is located on the Cussicks Spring, Banks, and Chris Creek USGS topographic maps, in Section 2, T153N, R98W, and Sections 25, 35 and 36, T154N, R98W, in Williams County, North Dakota (ND). The SP is located on the northern shore of Lake Sakakawea, about 18 miles east of Williston, ND. The SP contains 490.0 leased acres with an elevation of at least 1850 feet above mean sea level (msl) and approximately 450.50 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet msl. Lewis and Clark SP is accessed from ND Highway 1804 by a paved county road 3 miles long.

Topography and Soils. The topography consists of slight to moderate hills. The primary soils are Williams-Zahl loams (6 to 9 percent slopes), Amor-Williams-Zahl loams (3 to 9 percent slopes), Amor-Zahl-Cabba loams (9 to 25 percent slopes), Cabba-Zahl loams (25 to 60 percent slopes), Korchea-Divide loams, Wabek sandy loam (6 to 25 percent slopes) and Shambo loam (0 to 3 percent slopes).

Vegetation. The vegetation consists mainly of short- to mid-grass native prairie species and introduced grass species, with native shrubs and trees in the draws. A wide variety of hardwood shrubs and trees have been planted for wind protection, aesthetics, and shade. Noxious weeds include Canada thistle and leafy spurge.

Fish and Wildlife. Rabbits, rodents, other small mammals, and songbirds are the primary wildlife residents in the SP. Mule deer, white-tailed deer, coyotes, foxes, hawks, and owls transiently use the SP.

Visitation. The visits recorded by the U.S. Army Corps of Engineers (Corps) at this SP during fiscal years 1995 through 2006 are presented in the visitation section of Chapter 2. A fiscal year extends from October 1 through September 30 of the next calendar year.

The NDPRD records visitation by calendar year, not fiscal year, and calculates the number of visitors by a different method than the Corps uses. The visitors recorded by NDPRD at Lewis and Clark SP during calendar years 1995 through 2006 are presented in the table below. The number of campers, which are included in the total visitors, is based on an NDPRD estimate of

3.3 persons per occupied campsite. Cabin renters are included in the number of total visitors, but not in the number of campers, in the table below.

Year	Total Visitors	Campers	Year	Total Visitors	Campers
1995	74,377	6,353	2001	52,255	6,557
1996	50,801	6,221	2002	50,590	7,999
1997	72,207	6,217	2003	39,950	8,283
1998	61,127	6,428	2004	34,776	7,788
1999	89,163	6,844	2005	33,037	5,950
2000	64,837	7,310	2006	33,710	6,303

**Recreation.** Lewis and Clark SP receives heavy recreational use, especially during the summer months. Popular day-use activities include boating, fishing, hiking, picnicking, horseshoes, volleyball, swimming, and interpretive programs. NDPRD records indicate that between 1995 and 2006, about 12.5 percent of visitors to the SP engaged in camping. Camping facilities include 2 rental cabins; a dump station; 3 group camping areas (each with a fire ring, 3 picnic tables, and 3 30-amp electrical outlets); and 73 campsites, each with a picnic table and fire ring, and most with electrical hookups (52 30-amp and one 50-amp). Other facilities used by day users and campers include an entrance station, amphitheater, 2 information kiosks, 2 group picnic shelters with electricity and a total of 24 picnic tables, 3 group picnic areas with a total of 16 picnic tables and 3 grills, a playground, 2 boat ramps, a fish cleaning station, a marina with boat fuel pump, a storage building, a maintenance building, 6 restrooms with a total of 6 showers, and 8 parking lots with a total of 12 security lights. Lewis and Clark SP has 10 miles of hiking and nature trails. A hard-surfaced hiking and bicycling trail 6 feet wide and approximately 1.4 miles long is scheduled to be constructed in the campground area in 2007 using Lewis and Clark Legacy Trail cost-shared funding. Because it is located at the upper end of Lake Sakakawea, Lewis and Clark SP is significantly affected by low water levels. During times of lower than average water levels, the marina at Lewis and Clark SP is not usable, and launching even a relatively small fishing boat is difficult.

**Other Important Past Management Activities.** In 1991, the Corps conducted an archaeological dig at the SP and invited members of the general public to participate on a volunteer basis.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Promote prevention of the spread of aquatic nuisance species;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;

- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Expand camping areas and facilities;
- Construct additional primitive and full-service rental cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Expand day use areas and facilities;
- Construct and improve multi-use non-motorized trail facilities;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline to control erosion and protect recreation facilities;
- Provide development opportunities to concessionaires for water-related activities;
- Expand the marina dock and gas supply/pump-out facilities;
- Remove silt deposits from the marina and from the channel to Lake Sakakawea;
- Construct shoreline fishing piers that meet Americans with Disabilities Act (ADA) standards;
- Coordinate with other entities to provide educational signage for preventing the spread of aquatic nuisance species;
- Coordinate with other entities to provide facilities for hosing down boats and trailers to prevent the spread of aquatic nuisance species;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for aesthetics, shade, and wildlife food supply and habitat.

#### **7.91. LEWIS AND CLARK AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 098**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Lewis and Clark Agricultural Leases Vegetative MU is shown on Sheets 18 and 19 (of 22) in Appendix A. It is located on the Chris Creek USGS topographic map in Sections 2, 3, and 15, T153N, R98W; and Sections 22 and 23, T153N, R99W, in Williams County, North Dakota (ND). The MU is located on the northern shore of Lake Sakakawea, west of Lewis and Clark State Park and about 18 miles east of Williston, ND. It is accessed from ND Highway 1804 by roads at least 7 miles long. The MU contains approximately 78.15 acres of project lands

calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently rolling hills to steep badlands. The primary soils are Cabba-Badland complex (9 to 70 percent slopes), Cabba-Amor-Zahl loams (25 to 60 percent slopes), Badland, Appam sandy loam (0 to 6 percent slopes), and Zahl-Williams loams (9 to 15 percent slopes).

Vegetation. Vegetation in the area consists mainly of native and introduced short- to mid-grasses and native shrubs and trees in the coulees. Rocky Mountain juniper is located in the badlands portion of the MU.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary wildlife residents of the MU. Transient species include white-tailed and mule deer, coyote, fox, hawks, and owls.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in this vegetative management unit include upland and big game hunting. However, access and recreational uses are limited due to the rugged terrain.

Other Important Past Management Activities. The MU is leased for livestock grazing.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;

- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.92. LAKESHORE NEAR LONG CREEK COTTAGE SITE                      MANAGEMENT UNIT (MU): 099**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Long Creek Cottage Site is shown on Sheet 18 (of 22) in Appendix A. It is located on the Banks and Chris Creek USGS topographic maps, in Sections 2, 11, and 14, T153N, R98W, in Williams County, North Dakota (ND). The MU is located on the northern shore of Lake Sakakawea approximately 1 mile south of Lewis and Clark State Park and 18 miles east of Williston, ND. The MU is accessed by 5 miles of graveled county roads from ND Highway 1804. The MU contains approximately 164.60 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of this MU consists of gently rolling hills sloping down to the shoreline. The primary soils include Appam sandy loam (0 to 6 percent slopes), Farland silt loam (0 to 6 percent slopes), and Lihen loamy sand (0 to 6 percent slopes).

Vegetation. Vegetation in the area consists of short to mid-height native and introduced grasses, with some native shrubs and trees. Two blocks of trees were planted by the ND Game and Fish Department for mitigation purposes.

Fish and Wildlife. The MU is used by songbirds, upland game birds, rodents, cottontail rabbits, and other small mammals.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating, fishing, and off-road vehicle use are the major recreational activities at the lakeshore area near Long Creek Cottage Site. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.



Other Important Past Management Activities. Originally the lots at the Long Creek Cottage site were leased to private citizens to develop summer homes. By Congressional mandate, in the 1960s, the lots were sold off by the Corps.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species; Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

### **7.93. DAKOTA HILLS CHRISTIAN CAMP (CAMP CHERITH)**

**MGT. UNIT (MU):100**

Land Classification. Recreation

Managing Agency. Lutheran Brethren Fellowship Church

Location. The Dakota Hills Christian Camp is shown on Sheet 18 (of 22) in Appendix A. It is located on the Chris Creek USGS topographic map, in Section 15 of T153N, R98W, in Williams

County, North Dakota (ND). The MU is located on the northern shore of Lake Sakakawea about 14 miles east and 5 miles south of Williston, ND. The MU contains approximately 97.58 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a gravel road.

Topography and Soils. The topography of the area consists of rolling hills and one fairly steep coulee. The majority of the camp's facilities are located on Livona-Zahl complex (6 to 9 percent slopes). The rest of the MU is comprised of Farland silt loam (0 to 6 percent slopes), Livona-Zahl Complex (6 to 9 percent slopes), and Zahl-Williams loams (15 to 60 percent slopes).

Vegetation. The vegetation consists of short to mid-sized native and introduced grass species, with some native shrubs and trees.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the MU.

Visitation. The U.S. Army Corps of Engineers does not record visitation at this MU.

Recreation. Recreation activities include swimming, hiking, games, campfires, and nature education. Facilities include cabins, two houses, a bathhouse, a dining hall, a church, a campground, interpretive signs, and a swimming area.

Other Important Past Management Activities. Several youth camps and a limited number of adult retreats have been held annually at the camp, mainly in the summer months.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for group day use and camping activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide educational opportunities for wildlife management and observation;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Update the electrical system in the two houses;

- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing.

#### **7.94. CAMP CHERITH WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 101**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Camp Cherith Wildlife Area (WA) is shown on Sheets 18 and 19 (of 22) in Appendix A. It is located on the Chris Creek USGS topographic map in Sections 19 - 22, T153N, R98W, and Sections 23 and 24, T153N, R99W, in Williams County, North Dakota (ND). The WA is located on the northern shore of Lake Sakakawea near Camp Cherith, about 14 miles east and 5 miles south of Williston, ND. It is accessed from ND Highway 1804 by roads at least 6 miles long. The WA contains approximately 257.68 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the WA consists extensively of badlands terrain. The primary soils consist of Cabba-Badland complex (9 to 70 percent slopes), Amor-Zahl-Cabba loams (6 to 25 percent slopes), and Cabba-Amor-Zahl loams (25 to 60 percent slopes).

Vegetation. Vegetation in the WA consists of native and introduced short to mid-height grasses, with native shrubs and trees in the coulees. Rocky Mountain juniper is located in the badlands part of the WA.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the WA. Mule deer, white-tailed deer, coyote, fox, hawks, and owls are transient users of the WA.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the WA include some upland and big game hunting. Recreational visits are minimal due to the remote location and rugged terrain of the area.

Other Important Past Management Activities. The WA has had leases for livestock grazing.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;

- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor any grazing or agricultural use to improve the habitat for wildlife;
- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.95. LAKESHORE NEAR PLUM (CHRIS) CREEK SUBDIVISION**

**MGT. UNIT (MU): 102**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Plum Creek Subdivision is shown on Sheets 18 and 19 (of 22) in Appendix A. It is located on the Chris Creek and Lake Jessie USGS topographic maps, in Section 23, T153N, R99W, in Williams County, North Dakota (ND). The MU is located on the northern shore of Lake Sakakawea, approximately 14 miles east and 4 miles south of Williston, ND. The MU is accessed by 6.7 miles of paved county road from ND Highway 1804. The MU contains approximately 31.15 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this area consists of gentle to moderately sloped hills. The dominant soil type is Cabba-Badland complex (9 to 70 percent slopes).

Vegetation. The vegetation consists of native and introduced short- to mid-grass prairie species, with some native shrubs and trees.

Fish and Wildlife. The area is used by songbirds, upland game birds, rodents, cottontail rabbits, and other small mammals.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating, fishing and off-road vehicle use are the major recreational activities at the lakeshore area near Plum Creek Subdivision. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Plum Creek Subdivision, which adjoins this lakeshore MU, was formerly known as Chris Creek Subdivision. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide resource-oriented development consistent with approved day use activities;

- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.96. CEDAR CREEK WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 103**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Cedar Creek Wildlife Area (WA) is shown on Sheet 19 (of 22) in Appendix A. It is located on the Lake Jessie USGS topographic map in Sections 3 and 4, T152N, R100W, and Sections 22, 27-29, 31, and 32, T153N, R99W, in Williams County, North Dakota (ND). The WA is located on the northern shore of Lake Sakakawea and is 9 miles east and 8 miles south of Williston, ND. It is accessed from ND Highway 1804 by roads at least 6 miles long. The WA contains approximately 350.59 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the WA consists mainly of badlands. The soils are composed primarily of Cabba-Badland complex (9 to 70 percent slopes) and Badland. Some Korchea loam (0 to 3 percent slopes), Daglum-Rhoades loams (0 to 6 percent slopes), Amor-Williams-Zahl loams (3 to 9 percent slopes), and Savage-Grail silty loams (0 to 6 percent slopes) are also located in the WA.

Vegetation. Vegetation in the WA consists of native and introduced short to mid-height grasses, with native shrubs and trees in the coulees. Rocky Mountain juniper is located in the badlands portion of the WA.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the WA. Mule and white-tailed deer, coyote, fox, hawks, and owls are transient users of the WA.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the WA include some upland and big game hunting.

Other Important Past Management Activities. Portions of the WA have had leases for livestock grazing.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor any grazing or agricultural use to improve the habitat for wildlife;
- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;

- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.97. WILLISTON SOUTH AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 104**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Williston South Agricultural Leases Vegetative MU is shown on Sheets 19 and 20 (of 22) in Appendix A. It is located on the Lake Jessie and Williston SE USGS topographic maps, in Sections 27, 34, and 35, T153N, R100W; and Section 5, T152N, R100W, all in Williams County, North Dakota (ND). The MU is located approximately 10 miles southeast of Williston, ND. It is accessed by a winding, unpaved road about 11 miles long from ND Highway 1804. The MU contains approximately 64.98 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Williston South Agricultural Leases ranges from gently to moderately sloping terrain. Dominant soil types include Farland silt loam (1 to 6 percent slopes) and Savage-Grail silty clay loams (0 to 6 percent slopes). Both are well drained soils.

Vegetation. The vegetation mainly consists of short to mid-height native and introduced grass species. Native shrubs and trees are found in the coulees. Rocky Mountain juniper is found in the badlands portion of the MU.

Fish and Wildlife. A wide variety of species inhabits the MU. Big game species include mule deer, white-tailed deer, and pronghorn. Other mammals include coyotes, foxes, jackrabbits, cottontail rabbits, and rodents. Avian species include hawks, owls, upland game birds, and songbirds.

Visitation. The Corps does not record visitation for this vegetative management area.



Recreation. Some hunting of upland game birds and deer is the only recreational use in the MU because of limited access to the MU.

Other Important Past Management Activities. Portions of the MU have been leased out for livestock grazing.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## 7.98. KJORSTAD BOTTOMS AREA

## MANAGEMENT UNIT (MU): 105

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Kjorstad Bottoms Area is shown on Sheets 19 (of 22) in Appendix A. It is located on the Lake Jessie USGS topographic map in Section 4, T152N, R100W, in Williams County, North Dakota (ND). The MU is located approximately 10 miles southeast of Williston, ND. The MU contains approximately 9.58 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Williston South Agricultural Leases ranges from gently to moderately sloping terrain. Dominant soil types include Farland silt loam (1 to 6 percent slopes) and Savage-Grail silty clay loams (0 to 6 percent slopes). Both are well drained soils.

Vegetation. Vegetation in the area consists mainly of native and introduced short- to mid-grass species. Some trees and shrubs are located in the coulees.

Fish and Wildlife. Songbirds, upland game birds, rodents, rabbits, and other small mammals are the primary wildlife residents of the MU. Transient species include white-tailed and mule deer, coyote, fox, and waterfowl and shorebirds along the shoreline.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. Recreational activities in the Kjorstad Bottoms Area are limited. Activities include some fishing and boating on the lake adjacent to the MU.

Other Important Past Management Activities. Visitors have used the area for day use activities for several consecutive years.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;

- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Control noxious weeds.

#### **7.99. WILLISTON SOUTH WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 106**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Williston South Wildlife Area (WA) is shown on Sheets 19, 20, and 21 (of 22) in Appendix A. It is located on the Williston SE USGS topographic map, in Sections 4, 9, 16, 21, 27, and 28, T153N, R100W; and Section 33, T154N, R100W, in Williams County, North Dakota (ND). The MU is located on the northern shore of Lake Sakakawea and is about 4 miles southeast of Williston, ND. It is accessed from ND Highway 1804 by roads at least 4 miles long. The MU contains approximately 639.96 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gentle to steep slopes, including some badlands terrain. The primary soils are from the Cabba-Badland, outcrop complex (9 to 70 percent slopes), Amor-Zahl-Cabba loams (9 to 25 percent slopes), Cherry silt loam (0 to 6 percent slopes), and Badland. All these soils are well drained except Badland, which has no drainage classification.

Vegetation. Vegetation in the MU consists of native and introduced short to mid-height grasses, with native shrubs and trees in the coulees. Rocky Mountain juniper is located in the badlands part of the MU.

Fish and Wildlife. Songbirds, rodents, rabbits, and other small mammals are the primary residents of the MU. Mule deer, white-tailed deer, coyote, fox, hawks, and owls are transient users of the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the MU include some upland and big game hunting. The MU receives minimal recreational use due to the remote location and rugged terrain of the area.

Other Important Past Management Activities. The far northern portion of this MU was designated as a grassland (vegetative) management area in the 1978 Master Plan.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that

may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;

- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.100. WILLISTON GRASSLANDS**

**MANAGEMENT UNIT (MU): 107**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Williston Grasslands Vegetative MU is shown on Sheets 20 and 21 (of 22) in Appendix A. It is located on the Williston East and Williston SE USGS topographic maps, in the SE ¼ of Section 19, NE ¼ of Section 20, SW ¼ of Section 28, S ½ of Section 29, NW ¼ of Section 33, T154N, R100W, in Williams County, North Dakota (ND). The MU is located approximately 1 to 2 miles east and southeast of Williston, ND. The MU contains approximately 107.44 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently sloping terrain. Dominant soil types include Bowdle loam (0 to 3 percent slopes), Havrelon loam (0 to 1 percent slopes), Korchea loam (0 to 2 percent slopes), Lohler silty clay, slightly wet (0 to 2 percent slopes), Appam sandy loam (0 to 6 percent slopes), Shambo loam (0 to 2 percent slopes), Amor-Williams-Zahl loams (3 to 9 percent slopes), and Daglum-Rhoades complex (0 to 6 percent slopes). All are well drained soils, except for Appam sandy loam, which is somewhat excessively drained; and Lohler silty clay, slightly wet, which is moderately well drained.

Vegetation. Vegetation in the area consists mainly of native and introduced grasses. The MU also contains some shrubs and trees.

Fish and Wildlife. A wide variety of species inhabit the MU. Mammals include white-tailed deer, coyotes, fox, beaver, jackrabbits, cottontail rabbits, and rodents. Avian species include hawks, owls, upland game birds, waterfowl, shorebirds, and songbirds.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in the Williston Grasslands are limited to occasional upland and big game hunting.

Other Important Past Management Activities. Prior to 1991, the MU contained agricultural leases. Part of the MU is available for haying on a rotational basis.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively manage any grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.101. CUT BLUFF EXPEDITION OVERLOOK**

**MANAGEMENT UNIT (MU): 108**

Land Classification. Recreation

Managing Agency. Williams County Water Resources District

Location. The Cut Bluff Expedition Overlook is shown on Sheets 20 and 21 (of 22) in Appendix A. It is located on the Williston SE USGS topographic map in the NE 1/4 of Section 32, T154N, R100W, in Williams County, North Dakota (ND). This MU is located approximately 1.5 miles southeast of Williston, ND. It is accessed from ND Highway 1804 by a gravel road about 2 miles long. It contains approximately 2.78 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of gently rolling slopes. The dominant soil types in the area are Tally fine sandy loam (6 to 9 percent slopes) and Daglum-Rhoades complex (0 to 6 percent slopes). Both are well drained soils.

Vegetation. Vegetation at this MU includes a plant community of mid and short prairie grasses, sedges, and forbs. A variety of trees and shrubs are found here, including buckbrush, green ash, creeping juniper, and buffaloberry. Green ash, cottonwood, Russian olive, Ponderosa pine, and Colorado blue spruce have been planted in the area.

Fish and Wildlife. Mammals present in the area include cottontail rabbits, coyotes, white-tailed deer, and porcupine. Birds in the area include sharp-tailed grouse, ring-necked pheasant, Hungarian partridge, and red-tailed hawks.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this MU.

Recreation. One of this recreation area's primary purposes is to provide a community interpretive location depicting the travels of Lewis and Clark through western North Dakota, specifically Williston. The Lewis and Clark expedition visited the area on April 21, 1805. The MU has a Lewis and Clark monument with a plaque, a pea gravel nature trail, vault toilets, a large picnic shelter, picnic tables, fire rings, and primitive camping sites.

Other Important Past Management Activities. This area was previously managed by the Corps as a grassland (vegetative) management area. The land classification of the area was changed to Recreation by Master Plan Supplement 9, approved in May 2003, which established the recreation area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Add 2 small picnic shelters with tables and fire rings/grills;
- Replace portable toilets with vault toilets;

- Replace pea-gravel trail with concrete;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.102. LITTLE MUDDY WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 109**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Muddy Wildlife Area (WA) is shown on Sheet 21 (of 22) in Appendix A. It is located on the Williston East USGS topographic map in Sections 6, 7, 18, and 19, T154N, R100W, and Sections 1, 12, 13, and 24, T154N, R101W, in Williams County, North Dakota (ND). The WA is located along both sides of the Little Muddy Bay just east and northeast of Williston, ND. The WA contains 473 acres of project lands.

Topography and Soils. The topography is relatively flat because the WA is located in the flood plain of the Little Muddy River/Little Muddy Bay. The soils are predominantly Harriet and Stirum soils, especially in the southern portions of the WA. Small areas of Shambo, Lihen, Lehr, Korchea, Daglum-Rhoades, Farnuf, Loam and Appam soils also occur in the WA.

Vegetation. The primary vegetation in the WA includes short to mid-height native and introduced grasses, with some native shrubs and trees. Cultivated fields are also present. Along the Little Muddy shrubs, trees, and hydrophilic plants will be found. A cut-off (oxbow) lake of the Little Muddy River is dominated by cattails.

Fish and Wildlife. A wide variety of species inhabits the WA. Mammals include white-tailed deer, coyotes, foxes, beaver, jackrabbits, cottontails, and rodents. Avian species include hawks, owls, shorebirds, and song birds. The WA is extensively used by numerous waterfowl species as a staging area and brood rearing area. A fair number of ring-necked pheasants and other upland game birds utilize the cover found here. Several species of reptiles are also found in the WA.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreation activities in the WA include canoeing, cross country skiing, hiking, fishing, boating, picnicking, wildlife viewing, and hunting. A paved parking lot is located at White Bridge, on the west shore of Little Muddy Bay. The gentle slope towards Little Muddy Bay near the parking lot facilitates canoe launching and beaching here. The White Bridge parking area serves as the northern trailhead for the 2-mile-long Little Muddy Canoe Trail that begins at the Little Muddy Recreation Area/ Thompson Landing. White Bridge is also the eastern trailhead for a walking trail that extends west about 0.5 mile along the southern boundary of the Eagle Ridge Golf Course to Spring Lake Park. Both the canoe trail and walking trail were constructed with Lewis and Clark Legacy Trail cost-shared funding in 2006.

Other Important Past Management Activities. A portion of the WA on the west side of Little Muddy Bay was previously leased to the Williston Public School District for science education.



A predator control fence and wildlife viewing blind were constructed here as Eagle Scout projects.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;

- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

### **7.103. WILLISTON OPERATIONS**

**MANAGEMENT UNIT (MU): 110**

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The MU is shown on Sheets 20 and 21 (of 22) in Appendix A. It is located in the Williston West and Williston East USGS topographic maps in Sections 24, 25, 26, and 27, T154N, R101W, and in Section 19, T154N, R100W, in Williams County, North Dakota (ND). The MU is south of the city of Williston, ND and contains approximately 356.36 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography is relatively flat. Soils consist primarily of Lohler silty clay.

Vegetation. The vegetation consists primarily of grasses with some shrubs and trees.

Fish and Wildlife. The area flourishes with an abundance of white-tailed deer and ring-necked pheasant. Coyotes, bald eagles (in the winter months), golden eagles, and numerous species of songbirds are also seen within the MU. The area is also inhabited by furbearers including mink, muskrat, beaver, and raccoon.

Visitation. The Corps does not record visitation at this project operations area.

Recreation. Visitor use for this area consists primarily of bird watching, hiking, bicycling, walking, and jogging. The area is in the National Watchable Wildlife Program, which draws many national visitors each year. In addition, tours are provided to school and civic groups.

Other Important Past Management Activities. The portion of the MU occupied by, and immediately surrounding, the city's sewage lagoons is leased to the city of Williston for its wastewater treatment operations. The sewage lagoon area is fenced and closed to the public.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this project operations area include the following, not in priority order:

- Cooperate with the city of Williston as needed to ensure safe operation of the city's sewage lagoons;

- Maintain and operate project structures in a manner that allows them to effectively fulfill project purposes;
- Maintain the operational integrity of the adjacent Williston levee;
- Provide interpretation of the natural and ecological resources found in the area;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Provide for non-consumptive use of resources such as hiking, photography, and sightseeing in the area not leased to the city of Williston;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Upgrade and maintain the quality of habitat for a variety of wildlife species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this project operations area include the following, not in priority order:

- Provide for repairs, replacements, and rehabilitation to ensure the integrity of the adjacent Williston levee;
- Provide appropriate protection for any cultural resources;
- Plant trees, shrubs, and wetland plants to increase winter cover, woody vegetation, and food sources for wildlife;
- Enhance grassland vigor by a rotational system of haying, if appropriate;
- Upgrade educational and interpretive displays for visitors;
- Control noxious weeds.

#### **7.104. LITTLE MUDDY AGRICULTURAL LEASES WILDLIFE AREA      MGT. UNIT (MU): 111**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Muddy Agricultural Leases Wildlife Area (WA) is shown on Sheets 20 and 21 (of 22) in Appendix A. It is located on the Williston East USGS topographic map, in Section 19, T154N, R100W, and in Sections 19, 30, and 31, T155N, R100W, in Williams County, North Dakota (ND). One portion of the MU is located on the eastern side of Little Muddy Bay less than a mile east of Williston, ND and is less than 0.25 miles from ND Highway 1804. The other portion of the MU is located on the northern portion of Little Muddy Bay and is accessed from ND Highway 1804 by traveling 4 miles north on County Road 9 and then 0.5 miles west. The MU contains approximately 125.16 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Little Muddy Agricultural Leases WA consists of gently rolling slopes. The dominant soil types in the MU are Havrelon loam, slightly wet (0 to 1 percent slopes), Lehr loam (0 to 6 percent slopes), Trembles fine sandy loam, slightly wet (0 to 1 percent slopes), and Harriet and Stirum soils (0 to 1 percent slopes). Havrelon loam soils are well drained, Lehr loam soils are somewhat excessively drained, Trembles fine sandy loam soils are moderately well drained, and Harriet and Stirum soils are poorly drained.

Vegetation. Vegetation in the area consists mainly of native and introduced grasses and cultivated fields. Shrubs, trees, and hydrophilic plants also exist along Little Muddy Bay.

Fish and Wildlife. Mammals using the WA include white-tailed deer, coyote, fox, beaver, jackrabbits, cottontail rabbits, and rodents. Avian species include hawks, owls, upland game birds, waterfowl, shorebirds, and songbirds.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in this WA include canoeing, cross-country skiing, hiking, fishing, and hunting.

Other Important Past Management Activities. The WA had been leased out for farming and livestock grazing. Several tracts have been removed from the agricultural program to be used for the Williston Centennial Forest.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Monitor and maintain the vegetative resources to ensure their continued survival;

- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.105. LITTLE MUDDY RECREATION AREA (THOMPSON LANDING) MGT. UNIT (MU): 112**

Land Classification. Recreation

Managing Agency. Williams County Water Resources District

Location. The Little Muddy Recreation Area is shown on Sheets 20 and 21 (of 22) in Appendix A. It is located on the Williston East USGS topographic map, in the NW 1/4 of Section 19, T154N, R100W, in Williams County, North Dakota (ND). The MU is located along the east shore of Little Muddy Bay, less than a mile east of Williston, ND. Access to the MU is from County Road 9. The MU contains approximately 2.78 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Little Muddy Recreation Area consists of gently rolling slopes. The MU is located in the Little Muddy Bay flood plain. The dominant soil type in the MU is Farland silt loam (1 to 6 percent slopes), which is a well drained soil.

Vegetation. The primary vegetation includes typical short grass prairie species. Aggressive weeds include Canadian thistle and creeping jenny. Shrubs, trees, and plants adapted to water are found along Little Muddy Bay. Trees have been planted along the shore south of the boat ramp and at the north end of the MU.

Fish and Wildlife. A wide variety of species inhabits the area. Mammals include white-tailed deer, coyotes, foxes, beaver, jackrabbits, cottontail rabbits, and rodents. Avian species include hawks, owls, upland game birds, waterfowl, shorebirds, and songbirds.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	6,897	2001	7,826
1996	7,968	2002	6,897
1997	6,137	2003	7,089
1998	4,954	2004	7,317
1999	4,769	2005	13,138
2000	4,610	2006	11,668

Recreation. Recreation activities include canoeing, picnicking, cross country skiing, hiking, fishing, and hunting. Facilities include a boat ramp, a fishing pier, a parking lot, an interpretive kiosk, picnic tables, a picnic shelter, and 2 vault toilets. A trailhead and canoe access and landing facilities were completed in 2006 with Lewis and Clark Legacy Trail cost-shared funding for a 2-mile-long canoe trail that extends to White Bridge.

Other Important Past Management Activities. The Little Muddy Recreation Area has also been referred to as Sam's Site. This area was officially renamed Thompson Landing in 2007 in honor of Gordon Thompson, a long-time member of Little Muddy Rec, Inc. Little Muddy Rec., Inc. was the third-party lessee at the time this Master Plan/EA was prepared.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Construct a new boat dock;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Reestablish native vegetation to enhance views and provide shade.

#### **7.106. LITTLE MUDDY AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 113**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

**Location.** The Little Muddy Agricultural Leases Vegetative MU is shown on Sheet 21 (of 22) in Appendix A. It is located on the Williston East and Blacktail Lake SE USGS topographic maps, in the SE ¼ of Section 8, E ½ of Section 18, and Section 31, T155N, R100W, in Williams County, North Dakota (ND). The MU is located approximately 1 to 4 miles north of Williston, ND. It is accessed from County Road 9 by a road approximately 1 mile long. The MU contains approximately 432.09 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

**Topography and Soils.** The topography in the MU consists of gently rolling slopes. The dominant soil types in the MU are Farnuf loam (0 to 3 percent slopes), Korchea loam (0 to 2 percent slopes), Lehr loam (0 to 6 percent slopes), Lihen loamy fine sand (0 to 6 percent slopes), Appam sandy loam (0 to 6 percent slopes), Farland silt loam (1 to 6 percent slopes), Harriet and Stirum soils (0 to 1 percent slopes), and Daglum-Rhoades complex (0 to 6 percent slopes). All soil types are well drained, except for Lehr loam and Appam sandy loams, which are somewhat excessively drained; and Harriet and Stirum soils, which are poorly drained.

**Vegetation.** Vegetation in the area consists mainly of native and introduced grasses and cultivated fields. Shrubs, trees, and hydrophilic plants also exist along Little Muddy Bay.

**Fish and Wildlife.** Mammals using the MU include white-tailed deer, coyote, fox, beaver, jackrabbits, cottontail rabbits, and rodents. Avian species include hawks, owls, upland game birds, waterfowl, shorebirds, and songbirds.

**Visitation.** The Corps does not record visitation for this vegetative management area.

**Recreation.** Recreational activities in this vegetative management unit include canoeing, cross-country skiing, hiking, fishing, and hunting.

**Other Important Past Management Activities.** The MU has been leased out for farming and livestock grazing.

**Cultural Resources.** Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);

- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.107. EAGLE RIDGE GOLF CLUB (WILLISTON COUNTRY CLUB)**

**MGT. UNIT (MU): 114**

Land Classification. Recreation

Managing Agency. Eagle Ridge Golf Club LLC

Location. The Eagle Ridge Golf Club is shown on Sheet 21 (of 22) in Appendix A. It is located on the Williston East USGS topographic map, in Section 36 of T155N, R101W, in Williams County, North Dakota (ND). The MU is located on the west bank of the Little Muddy River just north of Williston, ND, and contains approximately 219.91 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed from U.S. Highway 2 by a short paved road.

Topography and Soils. The topography in this MU consists of relatively flat flood plain giving way to slight hills. The primary soils consist of Appam sandy loams (0 to 6 percent slopes). Soils in the outlying portions of the MU are predominantly Shambo loams (0 to 3 percent slopes), Williams-Zahl loams (6 to 9 percent slopes), and Zahl-Williams loams.

Vegetation. Vegetation in the golf course area consists primarily of introduced grasses. Native and non-native short- and mixed-grass prairie species are found in other areas of the MU. Water loving plants occur in coulees, where they are fed by several springs.

Fish and Wildlife. Wildlife in the MU includes songbirds, rodents, rabbits, and other small mammals.

Visitation. Visitation is not recorded by the U.S. Army Corps of Engineers (Corps) for this MU.



Recreation. Golfing is the primary recreational activity in this MU. The golf course consists of 18 holes developed on project lands and a clubhouse that is located outside of the project boundary. Some upland game and waterfowl hunting is done along the portion of the MU that is adjacent to the Little Muddy River.

Other Important Past Management Activities. A lease was granted in 1958 to the Williston Country Club after it was found that the 9-hole golf course was located on project lands. The Eagle Ridge Golf Club LLC assumed the lease when it purchased the Williston Country Club and developed an additional 9 holes in the MU after the Corps prepared a baseline survey in 2005.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Provide high-quality golfing opportunities consistent with visitor safety;
- Provide opportunities for the elderly and handicapped to participate in recreational activities;
- Provide opportunities for hunting that are consistent with the safety of all visitors;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Construct a golf cart storage building;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide vegetative cover that enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, hunting, and sightseeing;
- Provide access for hunting on project lands;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.108. WILLISTON OFFICE AND LEVEE**

## **MANAGEMENT UNIT (MU): 115**

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Williston Office and Levee MU is shown on Sheets 20 and 21 (of 22) in Appendix A. The MU is located on the Williston East and Williston West USGS topographic maps in Sections 25-29, 31, and 32, T154N, R101W, and Sections 18, 19, and 30, T154N, R100W, in Williams County, North Dakota (ND). The Williston Area Protective Works and Levee extends 8.8 miles along the southern side of the city of Williston, ND from the Lewis and Clark Bridge west of the city well out into the flood plain and adjacent to the upper reaches of Lake Sakakawea. The Corps' Williston Resource Office, storage yards, shop complex, and pumping station are located adjacent to the Williston Levee, 2.2 miles from its north end. The Williston Resource Office is accessed by 12th Avenue. The MU contains approximately 175.09 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. Soils in the levee embankment consist primarily of Lohler silty clay. Along the relief ditch channel Lohler silty clay, Scorio silty clay, and Saline soil are also present. The topography for the basic levee section has a 10-foot top width (graveled surface) and side slopes of 1 vertical to 2.5 horizontal on the river side and 1 vertical to 2 horizontal on the land side. Along reaches of weaker foundation material, the slopes are flattened and are 1 vertical to 3 horizontal on the river side and 1 vertical to 2.5 horizontal on the land side. The levee is 15 feet high, and the side slopes are topsoiled and seeded. A low swampy area in the Missouri River bottom south of Williston between the levee and the city is part of an interior drainage system. Water from surface runoff is temporarily stored in this area. Water reaches this ponding area through natural drainage courses and constructed drainage ditches. Drainage ditches also connect the existing shallow ponds in the main ponding areas.

Vegetation. The levee side slopes consist of seeded crested wheatgrass. The levee toe and area adjacent to the drainage ditches consist of crested wheatgrass, smooth brome, and alfalfa. The relief ditch itself contains common cattail, reed canary grass, and bulrush. The presence of Canada thistle is evident throughout the relief ditch system. A small infestation of milkweed is present at the start of the levee embankment near the Lewis and Clark Bridge.

Fish and Wildlife. The area flourishes with an abundance of white-tailed deer and ring-necked pheasant. Coyotes, bald eagles (in the winter months), golden eagles, an occasional moose, and numerous species of songbirds also use the levee area. Interior least terns have been sighted along the relief ditch on occasion. The relief ditch area is also inhabited by furbearers such as mink, muskrat, beaver, and raccoon. Two species of minnows present within the relief ditch system are the brook stickleback minnow and the fathead minnow.

Visitation. The Corps does not record visitation for this area.

Recreation. Although the area has been developed as an operations area, recreational opportunities abound. The levee area has been designated a Watchable Wildlife Area. The top and lower levee roads are graveled and serve as a walking access for the public to enjoy wildlife viewing opportunities. In addition, the area is used by walkers, joggers and bicyclists due to its close proximity to the city of Williston and the prohibiting of motorized vehicles on the graveled "trails" along the levee toe and crest. The office area offers visitor parking and popular

springtime fishing access. There is an interpretive display area and a kiosk located within the parking area. In addition there is a display area and educational material offered within the office. Displays were updated in 2005.

Other Important Past Management Activities. The pumping station evacuates water trapped on the interior side of the Williston Levee. Although the levee protects the city from Missouri River flood waters, it also prevents natural drainage water on the land side from being able to run back into the river, thus creating the need for the pumping station. About 28,000 acres drain into the Williston Marsh (low swampy area). In addition, there are 198 instrumentation wells that drain into the marsh and are pumped.

Cultural Resources. Prior to any future development at or near this area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this project operations area include the following, not in priority order:

- Maintain the operational integrity of the levee, pumping plant operations and associated facilities in a manner that allows them to effectively fulfill project purposes;
- Effectively evacuate stormwater drainage;
- Promote public health and safety by controlling mosquitoes;
- Provide for public use of project structures where such use is feasible and does not interfere with other project purposes;
- Provide for non-consumptive use of resources such as hiking, nature study, photography, and sightseeing;
- Maintain interpretive displays and educational materials for visitors;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Manage vegetation resources in a manner best suited to the operational needs of the area;
- Upgrade and maintain the quality of habitat for a variety of wildlife species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs at this project operations area include the following, not in priority order:

- Provide for repairs, replacements, and rehabilitation to ensure continued flood protection to the low-lying portions of the city of Williston and the Burlington Northern Railroad against high Lake Sakakawea pool conditions;
- Provide a quality recreational experience for users of the gravel trails;
- Establish hiking trails through the marsh;
- Provide appropriate protection for any cultural resources;
- Plant native grasses and wetland plants to increase cover and food sources for wildlife;
- Improve wildlife habitat through plantings;
- Control noxious weeds and mosquitoes in ways that involve coordination and cooperation between the Corps and the city of Williston.

## **7.109. WILLISTON WILDLIFE AREA**

## **MANAGEMENT UNIT (MU): 116**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Williston Wildlife Area (WA) is shown on Sheet 21 (of 22) in Appendix A. It is located on the Williston East and Williston West USGS topographic maps in Sections 22-28, T154N, R101W, in Williams County, North Dakota (ND). The WA is located immediately south and southwest of Williston, ND and is accessed by 12<sup>th</sup> Avenue, where the Williston Resource Office is located. It contains approximately 1,281.03 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography for this WA is consistently flat, and some areas are swampy due to water runoff from the ditches. Lohler silty clay, Saline soils, and Scorio silty clay are present along the ditch channels.

Vegetation. The areas adjacent to the drainage ditches contain crested wheatgrass, smooth brome, and alfalfa. The drainage ditches contain common cattail, reed canary grass, and bulrush. Canada thistle is present throughout the area drained by the ditches. Some agricultural fields are also included in the WA.

Fish and Wildlife. The WA flourishes with abundant populations of white-tailed deer and ring-necked pheasant. Also seen are coyotes, an occasional moose, bald eagles (in the winter months), golden eagles, and numerous species of songbirds. Interior least terns have occasionally been sighted along the relief ditch. The relief ditch is also inhabited by furbearers such as mink, muskrat, beaver, and raccoon. Fish present in the relief ditch system include the brook stickleback minnow and the fathead minnow.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. This WA has been designated as a Watchable Wildlife Area and is incorporated into the program on a national level. The graveled trails along the levee toe and crest enable the public to enjoy bird watching and wildlife viewing while walking, hiking, or bicycling. The location of this WA adjacent to Williston results in relatively high visitation, but disturbance to wildlife is greatly reduced because the WA is closed to motor vehicles. Visitors can park their vehicles and obtain information about the area's wildlife at the Corps' Williston Resource Office nearby.

Other Important Past Management Activities. Prior to construction of the Williston levee, the WA was used for grazing cattle. Agricultural leases exist in the southwestern portion of the WA. The area has been closed to hunting since 1991.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, bicycling, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor any grazing or agricultural use to improve the habitat for wildlife;
- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat if needed;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Establish hiking trails through the marsh;
- Provide for access to the nearby shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.110. EAST VALLEY AGRICULTURAL AND OIL LEASES WILDLIFE AREA     MGT. UNIT (MU): 118**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The East Valley Agricultural and Oil Leases Wildlife Area (WA) is shown on Sheets 20 and 22 (of 22) in Appendix A. It is located on the Trenton and Williston SW USGS topographic maps in Sections 15, 16, and 21, T153N, R102W, in Williams County, North Dakota (ND). This WA is located approximately 4 miles southwest of Williston, ND. The WA contains approximately 3454.87 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It can be accessed from ND Highway 1804 by a road approximately 0.5 mile long.

Topography and Soils. The topography in the East Valley Agricultural and Oil Leases WA consists of extremely flat bottomlands. The dominant soil types in the WA are Savage-Wade (0 to 3 percent slopes).

Vegetation. Vegetation in the area consists of smooth brome grass, seeded lawn grass, and scattered shrubs mixed with native and non-native grasses. Trees include boxelder, cottonwood, dogwood, green ash, and willow.

Fish and Wildlife. Game birds and songbirds are present within the WA. The area is also used by white-tailed deer and ring-necked pheasant. Beaver and mink frequent the area as well.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in this wildlife management area are limited to hunting.

Other Important Past Management Activities. Land in the MU has been leased for agricultural uses to the East Valley Mutual Aid Corporation, which subleases to individual farmers when the area is not flooded. Oil companies also have leases in this MU for the production of crude oil and natural gas.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;

- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively manage grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover on lands not leased for agriculture to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.111. LAKE TRENTON RECREATION AREA**

**MANAGEMENT UNIT (MU): 120**

Land Classification. Recreation

Managing Agency. Williams County Water Resources District

Location. The Lake Trenton Recreation Area is shown on Sheet 22 (of 22) in Appendix A. It is located on the Trenton USGS topographic map in Section 19 and the NE 1/4 of Section 20, T153N, R102W, in Williams County, North Dakota (ND). The MU is located less than a mile southeast of the town of Trenton, ND. The MU contains approximately 131.61 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a two-lane paved road.

Topography and Soils. The area lies adjacent to Lake Trenton, an oxbow lake of the Missouri River. The topography consists of flat bottomland. The soils in the area consist of Savage-Graill silty clay loams.

Vegetation. Vegetation in the MU consists of smooth brome grass, seeded lawn grasses, and scattered pockets of shrubs mixed in with exotic and native grasses. Tree species include boxelder, cottonwood, dogwood, green ash, and willow.

**Fish and Wildlife.** Game birds and songbirds are present within and around the recreation area. The area is host to many white-tailed deer and ring-necked pheasant. Furbearing species such as beaver and mink often frequent the area.

**Visitation.** The number of visits recorded at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	22,484	2001	20,871
1996	14,048	2002	21,218
1997	11,972	2003	24,870
1998	12,278	2004	23,427
1999	20,563	2005	24,927
2000	19,743	2006	21,649

**Recreation.** The MU has been operated and maintained by a third-party lessee, the Trenton Indian Service Area (TISA) Corporation, since 1975. Lake Trenton is a popular summer recreation site that attracts jet skiers, water skiers, large family and company picnics, and horseshoe tournaments. The annual "TISA Days" festivals are held here. Water-oriented facilities include a concrete two-lane boat ramp, a fish cleaning station, and a well groomed sandy beach that is a popular for swimming and sunbathing in the summer and shoreline fishing in the fall. There are 20 campsites, each with a 20-amp and a 30-amp electrical hookup. Other facilities include 2 entrance stations, 2 concession buildings, a group picnic shelter with 20 tables and 2 pedestal grills, 40 picnic sites (some with canopies), a basketball court, a multipurpose court, a miniature golf course, 9 horseshoe pits, a playground, and 2 restrooms with flush toilets as well as some vault toilets.

**Other Important Past Management Activities.** Before the recreation area was established, the area was utilized for pasture and was heavily covered with underbrush.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use from camping areas;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide concessionaire facilities and services;
- Improve existing access and circulation roads and parking areas;
- Provide access for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;



- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Continue to construct or improve boat ramps;
- Install a mechanism to control the level of Lake Trenton;
- Develop and maintain a beach on the north side of Lake Trenton;
- Install a fishing pier that meets Americans with Disabilities Act (ADA) standards;
- Install 2 docks at the boating and swimming area;
- Upgrade the bathroom facilities and boat docks to meet ADA standards;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide development opportunities to concessionaires;
- Add 5 to 10 primitive campsites;
- Add 10 to 15 camper pads with water and electric hookups at the park area;
- Add up to 10 portable camping cabins, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Add 20 picnic sites with pads, canopies, picnic tables, and grills at the park area;
- Install a walking bridge between the park area and the rodeo grounds;
- Install a portable rodeo office (small trailer);
- Lengthen the arena 50' and improve it (crows nest, back pens, canopied bleachers);
- Add 10 camper pads with electric hookups at the arena area;
- Construct bathroom facilities with showers at the arena area;
- Install an outdoor barbeque grill with canopy at the arena area;
- Add 20 picnic tables with canopies at the arena area;
- Improve the pavilion to provide a warming house for winter activities;
- Provide a non-permanent cultural sweat lodge;
- Erect a gazebo-type entertainment platform in the center of the park area;
- Install canopies on the horseshoe pits;
- Install rural water system facilities at the park area and arena;
- Pave roads and parking areas;
- Provide appropriate protection for any cultural resources;
- Develop a nature trail on the south side of the park area;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## 7.112. RAUMS GRASSLANDS

## MANAGEMENT UNIT (MU): 121

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Raums Grasslands Vegetative MU is shown on Sheets 19 and 20 (of 22) in Appendix A. It is located on the Williston SE USGS topographic map in Sections 17-19, T153N, R101W, in McKenzie County, North Dakota (ND). The MU is located on the west shore of the Lake, just north of American Legion Park. It is accessed from U.S. Highway 85 by a paved road approximately 3.5 miles long. The MU contains approximately 117.38 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography on the western side of the MU consists of rough elevated terrain. The southeast side of the MU is adjacent to the Missouri River and consists of flat bottomland. The northeast section the MU consists mainly of flat terrain. Soils consist of Daglum-Belfield Complex (0 to 6 percent slopes), Cabba-Chamas silt loam (15 to 50 percent slopes), Cabba-Badland Complex (9 to 70 percent slopes), Patent loam (1 to 6 percent slopes), Cabba-Zahl Complex (3 to 70 percent slopes), and Farnuf loam (3 to 6 percent slopes).

Vegetation. Grasses in the area consist of blue grama, prairie junegrass, and western wheatgrass. Other vegetation includes fringed sage, green ash, buffaloberry, currant, and chokecherry. The vegetation assists in controlling soil erosion in the area.

Fish and Wildlife. The area is used by white-tailed and mule deer, ring-necked pheasant, sharp-tailed grouse, and coyote.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in the MU consist of fishing, bird watching, walking, hiking, and jogging.

Other Important Past Management Activities. In 1993, 9 acres of project land was leased to provide an access road into the area.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;

- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

### **7.113. AMERICAN LEGION PARK**

**MANAGEMENT UNIT (MU): 122**

Land Classification. Recreation

Managing Agency. American Legion

Location. The American Legion Park is shown on Sheet 20 (of 22) in Appendix A. It is located on the Williston SE USGS topographic map in Section 19, T153N, R100W, in McKenzie County, North Dakota (ND). The MU is located almost directly south of Williston, ND on the west side of the lake. The MU contains approximately 54.60 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The park is accessed by a paved road from U.S. Highway 85, and the roads within the park are gravel.

Topography and Soils. Topography in the American Legion Park consists of hilly and rough terrain on the west side and flatlands on the east side. The soils in this area consists of Daglum-Belfield complex (0 to 6 percent slopes), Patent loam (1 to 6 percent slopes), Cabba-Chama silt loams (15 to 50 percent slopes), Cabba-Zahl complex (3 to 70 percent slopes), Cabba-Badland complex (9 to 70 percent slopes), Temvik-Williams silt loam (3 to 6 percent slopes), and Temvik-Wilton silt loam (0 to 3 percent slopes).

**Vegetation.** Grassland vegetation consists of blue grama, prairie junegrass, western wheatgrass, and fringed sage. Tree species include green ash, buffaloberry, currant, and chokecherry.

**Fish and Wildlife.** Common big game mammals in this area include white-tailed deer and mule deer, and common game birds include ring-necked pheasants and sharp-tailed grouse. Coyotes are often found at this MU.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	9,039	2001	4,669
1996	12,466	2002	4,545
1997	10,000	2003	5,089
1998	8,303	2004	4,868
1999	4,999	2005	4,355
2000	4,536	2006	4,364

**Recreation.** This recreation area is operated by a concessionaire as a park for camping and day use. The area has 20 camping sites, of which 10 have 20-amp electric hookups. Other facilities include 6 picnic sites, a group picnic shelter, a playground, a boat ramp, a concession building, vault toilets, a swimming beach, and a 9-hole golf course. Recreational activities that occur in this MU include golfing, camping, picnicking, fishing, swimming, boating, waterskiing, hiking, jogging, nature watching, and walking.

**Other Important Past Management Activities.** This MU was known as the Raums Public Use Area before the American Legion leased the area. A tree planting project was started in 1988 to honor deceased veterans. The park has been designated as a non-consumptive use area since 1989; this designation made the park an attraction for people who wanted to observe wildlife in its natural habitat.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.114. RAUMS LOW-DENSITY RECREATION AREA**

**MANAGEMENT UNIT (MU): 123**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Raums Low-Density Recreation Area is shown on Sheet 20 (of 22) in Appendix A. It is located on the Williston SE USGS topographic map in Section 19, T153N, R101W, in McKenzie County, North Dakota (ND). The MU is located about 5 miles south of Williston, ND, on the west shore of Lake Sakakawea, adjacent to American Legion Park. The MU is accessed by a graveled road. The MU contains approximately 61.55 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The east side of the MU consists of flatlands, but on the west side the topography becomes hilly and rough. The soils in this area consists of Daglum-Belfield complex (0 to 6 percent slopes), Patent loam (1 to 6 percent slopes), Cabba-Chama silt loams (15 to 50 percent slopes), Cabba-Zahl complex (3 to 70 percent slopes), Cabba-Badland complex (9 to 70 percent slopes), Temvik-Williams silt loam (3 to 6 percent slopes), and Temvik-Wilton silt loam (0 to 3 percent slopes).

Vegetation. Vegetation consists of blue grama, prairie junegrass, western wheatgrass, and fringed sage. Tree species within the MU include green ash, buffaloberry, currant, and chokecherry.

Fish and Wildlife. Ring-necked pheasants and sharp-tailed grouse are common game birds in the area. White-tailed deer and mule deer are common big game mammals found in this area. Coyotes are often found in the area.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. This recreation area is operated for primitive camping and day use. Day use activities include hiking, nature observation, and photography. There were no recreation facilities in this MU at the time this Master Plan/EA was prepared.

Other Important Past Management Activities. This area was primarily used for grazing purposes before its current use as a low-density recreation area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be

eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and primitive camping;
- Provide lake access for water-oriented recreation as warranted by visitor needs;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide for adequate vehicular access, circulation, and parking;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, horseback riding, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade and/or develop roads and parking areas consistent with visitation levels;
- Install additional signage as needed;
- Use signage to designate a primitive camping area;
- Install additional fencing as needed;
- Install a vault or pit toilet consistent with public health needs;
- Install picnic facilities as needed to meet visitor demand;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, photography, bird watching, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Establish additional tree cover for shade and screening between the primitive campground area and day use areas;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Reestablish native vegetation to enhance views and provide shade;
- Control noxious weeds.

## **7.115. CAMP CREEK EAST AGRICULTURAL LEASES WILDLIFE AREA MGT. UNIT (MU): 124**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Camp Creek East Agricultural Leases Wildlife Area (WA) is shown on Sheets 19 and 20 (of 22) in Appendix A. It is located on the Watford City NW, Camp Creek East, and Williston SE USGS topographic maps, in Sections 7, 16-18, and 22, T152N, R100W, and in Sections 12 and 13, T152N, R101W, in McKenzie County, North Dakota (ND). The WA is located approximately 8 miles southeast of Williston, ND. The WA is accessed by graveled roads from U.S. Highway 85. The WA contains approximately 1057.31 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Camp Creek East Agricultural Leases WA consists of gently to steeply rolling slopes. Dominant soil types in the WA include Trembles fine sandy loam (0 to 2 percent slopes), Daglum-Belfield complex (0 to 6 percent slopes), Zahl-Cabba-Maschetah complex (3 to 70 percent slopes), and Cabba-Badland outcrop complex (9 to 70 percent slopes). Daglum-Belfield complex is moderately well drained and the other soil types are well drained.

Vegetation. Vegetation in the area consists of tall wheatgrass, sweet clover, and alfalfa. Trees and shrubs include buffaloberry, snowberry, cottonwood, green ash, and sagebrush.

Fish and Wildlife. Ring-necked pheasant and most waterfowl species indigenous to North Dakota frequent the area, in addition to a large variety of songbirds. White-tailed deer are the primary big game species, though mule deer and pronghorn also use the MU. All North Dakota furbearers utilize the area as well.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in this wildlife management area include hunting, fishing, photography, and primitive camping.

Other Important Past Management Activities. The MU has a long history of ranching and agricultural uses. The MU remains in a rotational grazing program. Oil and gas exploration has also occurred within the MU.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;

- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover of lands not leased for agriculture to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.116. CAMP CREEK EAST AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 125**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Camp Creek East Agricultural Leases Vegetative MU is shown on Sheet 19 (of 22) in Appendix A. It is located on the Watford City NW, Lake Jessie, and Chris Creek USGS topographic maps, in Sections 1, 11, 12, 14, and 15, T152N, R100W, and Sections 4-6, T152N, R99W, in McKenzie County, North Dakota (ND). The MU is located approximately 14 miles southeast of Williston, ND. The MU is accessed by graveled roads from ND Highway 1806. The MU contains approximately 764.15 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).



**Topography and Soils.** The topography in the Camp Creek East Agricultural Leases MU consists of gently to steeply rolling slopes. Dominant soil types in the MU include Harriet silt loam (0 to 2 percent slopes), Korchea loam (0 to 2 percent slopes), Farnuf loam (2 to 6 percent slopes), Dogtooth-Janesburg-Cabba complex (6 to 30 percent slopes), Zahl-Cabba-Maschetah complex (3 to 70 percent slopes), Cabba-Sen-Chama silt loams (15 to 70 percent slopes), Beisigl-Flasher-Tally complex (9 to 50 percent slopes), Flasher-Rock outcrop Vebar complex (9 to 70 percent slopes), Cabba-Badland, outcrop complex (9 to 70 percent slopes), Cabba-Chama-Havrelon silt loam (3 to 70 percent slopes), McKeen loam (0 to 1 percent slopes), and Zahl-Williams-Cabba complex (6 to 9 percent slopes). Most of the soil types are well drained. Exceptions include McKeen loam, which is very poorly drained; Harriet silt loam, which is poorly drained; and Beisigl-Flasher-Tally complex and Flasher-Rock outcrop Vebar complex, which are somewhat excessively drained.

**Vegetation.** Vegetation in the area consists of tall wheatgrass, sweet clover, and alfalfa. Trees and shrubs include buffaloberry, snowberry, cottonwood, green ash, and sagebrush.

**Fish and Wildlife.** Ring-necked pheasant and most waterfowl species indigenous to North Dakota frequent the area, in addition to a large variety of songbirds. White-tailed deer are the primary big game species, though mule deer and pronghorn also use the MU. All North Dakota furbearers utilize the area as well.

**Visitation.** The Corps does not record visitation for this vegetative management area.

**Recreation.** Recreational activities in this vegetative management unit include hunting, fishing, photography, and camping.

**Other Important Past Management Activities.** The MU has a long history of ranching and agricultural uses. The MU remains in a rotational grazing program. Oil and gas exploration has also occurred within the MU.

**Cultural Resources.** Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;

- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.117. CHRIS CREEK AGRICULTURAL LEASES**

#### **MANAGEMENT UNIT (MU): 126**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Chris Creek Agricultural Leases Vegetative MU is shown on Sheets 18 and 19 (of 22) in Appendix A. It is located on the Chris Creek USGS topographic map, in Sections 2-4, T152N, R99W; Sections 31-34, T153N, R98W; and Section 36, T153N, R99W, all in McKenzie County, North Dakota (ND). The MU is located approximately 9 miles southwest of Tobacco Garden Bay and 20 miles northwest of Watford City, ND. The MU may be accessed by graveled roads from US Highway 85. The MU contains approximately 364.81 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Chris Creek Agricultural Leases MU consists of gently to steeply rolling terrain that includes coulees and steep cutbanks. Dominant soil types in the MU include Korchea loam, channeled (0 to 2 percent slopes), Belfield-Savage silty clay loams (2 to 6 percent slopes), Williams-Bowbells loams (3 to 6 percent slopes), Williams-Zahl loams (6 to 9 percent slopes), Zahl-Williams loams (15 to 25 percent slopes), Zahl-Cabba-Maschetah complex (3 to 70 percent slopes), Temvik-Wilton silt loams (0 to 3 percent slopes), Cabba-Badland, outcrop complex (9 to 70 percent slopes), Cabba-Chama-Havrelon silt loam (3 to 70 percent slopes), Manning-Schaller-Wabek complex (6 to 25 percent slopes), Zahl-Cabba-Arikara complex (9 to 70 percent slopes), Zahl-Williams loams, dissected (15 to 45 percent slopes), and Zahl-Williams-Cabba complex (9 to 15 percent slopes). All of these soil types are well drained, with the exception of Williams-Bowbells loams, which are moderately well drained.

Vegetation. Vegetation in the area consists of tall wheatgrass, sweet clover, and alfalfa. Trees and shrubs include buffaloberry, snowberry, cottonwood, green ash, and sagebrush.

Fish and Wildlife. Ring-necked pheasant and most waterfowl species native to North Dakota frequent the area, in addition to a large variety of songbirds. White-tailed deer are the primary big game species, though mule deer and pronghorn also use the MU. All North Dakota furbearers utilize the area as well.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in this vegetative MU include hunting, fishing, photography, and camping.

Other Important Past Management Activities. The MU has a long history of ranching and agricultural uses. The MU remains in a rotational grazing program. Oil and gas exploration has also occurred within the MU.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;

- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.118. CHRIS CREEK AGRICULTURAL LEASES WILDLIFE AREA                      MGT. UNIT (MU): 127**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Chris Creek Agricultural Leases Wildlife Area (WA) is shown on Sheet 18 (of 22) in Appendix A. It is located on the Banks USGS topographic map, in Sections 5-7, T15N, R97W; Sections 13, 24-27, 34, and 35, T153N, R98W; and Sections 32 and 33, T154N, R97W, in McKenzie County, North Dakota (ND). The WA is located approximately 2 miles west of Tobacco Garden Bay, ND. The WA may be accessed by roads from ND Highway 1806. The WA contains approximately 847.53 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Chris Creek Agricultural Leases WA consists of gently to steeply rolling slopes. Dominant soil types in the WA include Farnuf loam (6 to 9 percent slopes), Zahl-Williams loams (9 to 15 percent slopes), Zahl-Cabba-Maschetah complex (3 to 70 percent slopes), Badland, high precipitation, Cabba-Badland, outcrop complex (9 to 70 percent slopes), Cabba-Chama-Havrelon silt loam (3 to 70 percent slopes), Zahl-Cabba-Arikara complex (9 to 70 percent slopes), and Badland, outcrop-Cabba complex (9 to 70 percent slopes). The Badland, high precipitation soil type has no drainage classification; the remaining soil types are well drained.

Vegetation. Vegetation in the area consists of tall wheatgrass, sweet clover, and alfalfa. Trees and shrubs include buffaloberry, snowberry, cottonwood, green ash, and sagebrush.

Fish and Wildlife. Ring-necked pheasant and most waterfowl species native to North Dakota frequent the area, in addition to a large variety of songbirds. White-tailed deer are the primary big game species, though mule deer and pronghorn also use the MU. All North Dakota furbearers utilize the area as well.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in this WA include hunting, fishing, photography, and primitive camping.

Other Important Past Management Activities. The MU has a long history of ranching and agricultural uses. The MU remains in a rotational grazing program. Oil and gas exploration has also occurred within the MU.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover of lands not leased for agriculture to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.119. TOBACCO GARDENS AGRICULTURAL LEASES**

**MANAGEMENT UNIT (MU): 129**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Tobacco Gardens Agricultural Leases Vegetative MU is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Red Mike Hill and Tobacco Garden Bay USGS topographic maps, in Section 4, T153N, R96W; Sections 2, 10, and 11, T153N, R97W; Sections 29-33, T154N, R96W; and Sections 35 and 36, T154N, R97W, all in McKenzie County, North Dakota (ND). The MU is located on the western and eastern sides of Tobacco Garden Bay, ND. This MU is divided into three areas and encompasses approximately 664.41 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The MU is accessed by ND Highway 1806.

Topography and Soils. The topography in the MU consists of gently to steeply rolling slopes. Dominant soil types include Korchea loam (0 to 2 percent slopes), Farnuf loam (2 to 6 percent slopes), Farnuf loam (6 to 9 percent slopes), Belfield-Savage silty clay loams (2 to 6 percent slopes), Williams-Zahl loams (3 to 6 percent slopes), Williams-Zahl loams (6 to 9 percent slopes), Zahl-Williams loams (15 to 25 percent slopes), Zahl-Cabba-Maschetah complex (15 to 25 percent slopes), Dooley-Zahl complex (3 to 6 percent slopes), Temvik-Williams silt loams (3 to 6 percent slopes), Beisigl-Flasher-Tally complex (9 to 50 percent slopes), Manning fine sandy loam (0 to 6 percent slopes), Cabba-Badland, outcrop complex (9 to 70 percent slopes), Cabba-Chama-Havrelon silt loam (3 to 70 percent slopes), Manning-Schaller-Wabek complex (6 to 25 percent slopes), Zahl-Cabba-Arikara complex (9 to 70 percent slopes), and Lambert silt loam (0 to 6 percent slopes). All are well drained soils, except for Beisigl-Flasher-Tally complex and Manning fine sandy loam, which are somewhat excessively drained; and Manning-Schaller-Wabek complex, which is excessively drained.

Vegetation. Vegetation in this MU consists of primarily of wheatgrass and other native upland and introduced grasses. Biennial and perennial weeds, native forbs, and wildflowers are also common in the MU. There are numerous small woody draws comprised of native trees and shrubs. Lowland areas have numerous species of wetland plants including cattails, reed grass, rushes, and sedges.

Fish and Wildlife. Mammals in the MU include white-tailed and mule deer, pronghorn, coyote, red fox, cottontail rabbits, skunk, badgers, raccoon, beavers, and many species of rodents. Upland game birds are abundant and include turkeys, pheasants, and sharp-tailed grouse. Other avian species include songbirds, waterfowl, shorebirds, and raptors. There are fewer terrestrial species due to heavy cattle grazing within the MU. This area of Lake Sakakawea also provides outstanding walleye, sauger, and northern pike fisheries.

The MU is also utilized by two threatened and endangered species. The northwestern peninsula on Tobacco Garden Bay is annually utilized by piping plovers for nesting. Least terns are occasionally seen in the bay.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Hunting, including upland game and big game hunting, is the primary recreational activity in the area with the exception of the extreme western portion of the MU. Other common recreational activities in the vegetative MU include fishing, water-skiing, hiking, camping, and wildlife viewing. Illegal off-road vehicle (ORV) use has a major impact on the bay area, particularly on the threatened and endangered species.

Other Important Past Management Activities. This area was primarily used for grazing before it was acquired by the Corps. Under Corps management, it has been grazed and cropped almost continuously.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.120. TOBACCO GARDEN LOW-DENSITY RECREATION AREA**

**MGT. UNIT (MU): 130**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. McKenzie County Park Board

Location. The Tobacco Garden Low-Density Recreation Area is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Tobacco Garden Bay USGS topographic map, in Section 35, T154N, R97W, in McKenzie County, North Dakota (ND). The recreation area is approximately 26 miles north of Watford City and is accessed by a paved road about 2 miles long from ND Highway 1806. The MU contains approximately 53.85 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Tobacco Garden Low-Density Recreation Area consists of gently rolling slopes. Dominant soil types include Dooley fine sandy loam (0 to 6 percent slopes) and Williams-Zahl loams (3 to 6 percent slopes), which are both well drained soils.

Vegetation. Vegetation consists mostly of crested wheatgrass and seeded lawn grasses, with some native and exotic grasses. Tree species include elm, plum, crabapple, and scattered small areas of willow and cottonwood along the water's edge.

Fish and Wildlife. Game birds and songbirds are present, with ring-necked pheasant being the most plentiful game bird. Many white-tailed deer, mule deer, and pronghorn live within and around the recreation area. Furbearing species near the area consist of beaver, mink, fox, and coyote.

Visitation. The U.S. Army Corps of Engineers does not record visitation at this low-density recreation area.

Recreation. This recreation area provides opportunities for primitive camping and day use. Day use recreation activities include hiking, wildlife observation, bird watching, and photography. There were no recreation facilities in the MU at the time this Master Plan/EA was prepared.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Other Important Past Management Activities. The McKenzie County Park Board leased this MU to provide an overflow area for visitors to the Tobacco Garden Recreation Area across the bay and decided not to install recreation facilities until they are needed to meet public needs.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide facilities for family and group day use activities and primitive camping;
- Provide lake access for water-oriented recreation as warranted by visitor needs;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;



- Provide for adequate vehicular access, circulation, and parking;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Upgrade and/or develop roads and parking areas consistent with visitation levels;
- Use signage to designate a primitive camping area;
- Install a vault or pit toilet consistent with public health needs;
- Install picnic facilities as needed to meet visitor demand;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Establish additional tree cover for shade and screening between the primitive campground and day use areas;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Reestablish native vegetation to enhance views and provide shade.

#### **7.121. TOBACCO GARDEN WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 131**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Tobacco Garden Wildlife Area (WA) is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Tobacco Garden Bay USGS topographic map, in Sections 2 and 11, T153N, R97W, in McKenzie County, North Dakota (ND). The MU is located on the southeastern portion of Tobacco Garden Bay. The WA is accessed by graveled roads from ND Highway 1806. The WA contains approximately 109.83 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Tobacco Garden WA consists of gently rolling slopes. Dominant soil types include Korchea loam (0 to 2 percent slopes), Zahl-Williams loams (15 to 25 percent slopes), Zahl-Cabba-Maschetah complex (3 to 70 percent slopes), Manning fine sandy loam (0 to 6 percent slopes), Manning-Schaller-Wabek complex (6 to 25 percent slopes), and Lehr-Stady loams (0 to 6 percent slopes). All are well drained, with the exception of Manning fine sandy loam, which is somewhat excessively drained, and the Manning-Schaller-Wabek complex, which is excessively drained.

Vegetation. Vegetation in this area consists of tall wheat grass, sweet clover, and alfalfa. Trees and shrubs include buffaloberry, snowberry, cottonwood, green ash, and plum.

Fish and Wildlife. Ring-necked pheasant and most waterfowl species indigenous to North Dakota frequent the area, in addition to a large variety of songbirds. White-tailed deer are the primary big game species, although mule deer and pronghorn also use the MU. All North Dakota furbearers utilize the area as well.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in this wildlife management area include hunting, fishing, hiking, photography, and primitive camping.

Other Important Past Management Activities. This land was used for grazing cattle before it was developed as a wildlife area.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;

- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.122. LAKESHORE NEAR TOBACCO GARDEN SUBDIVISION**

**MGT. UNIT (MU): 132**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore near the Tobacco Garden Subdivision is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Tobacco Garden Bay USGS topographic map, in the SE ¼ of Section 2, T153N, R97W, in McKenzie County, North Dakota (ND). The MU is located on the eastern side of Tobacco Garden Bay. A road 0.5 miles long from ND Highway 1806 provides paved access to the adjacent Tobacco Garden Subdivision but is graveled within the MU. The MU contains approximately 17.47 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the lakeshore area near Tobacco Garden Subdivision consists of gently rolling slopes. The soil type in the MU is Farnuf loam (0 to 2 percent slopes), a well drained soil. Shoreline erosion has occurred in the MU.

Vegetation. Vegetation consists mainly of native and non-native short and mid-height grasses, much of which is mowed by residents of the adjacent Tobacco Garden Subdivision.

Fish and Wildlife. Wildlife consists mainly of small rodents, small game birds, and songbirds.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Tobacco Garden Subdivision, with occasional shoreline fishing and off-road vehicle (ORV) use. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The 1978 Master Plan designated the area now occupied by this MU as a low-density recreation area. Increased patrolling has traditionally been implemented to control ORV use.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote soil conservation, water quality, and public safety by facilitating control of shoreline erosion where problems exist;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

**Development Needs.** Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Facilitate control of shoreline erosion where problems exist;
- Control noxious weeds.

### **7.123. TOBACCO GARDEN RECREATION AREA**

**MANAGEMENT UNIT (MU): 133**

**Land Classification.** Recreation

**Managing Agency.** McKenzie County Park Board

**Location.** The Tobacco Garden Recreation Area is shown on Sheets 17 and 18 (of 22) in Appendix A. It is located on the Tobacco Garden Bay USGS topographic map, in Section 1 and the NE ¼ of Section 2, T153N, R97W, and in the SW ¼ of Section 36, T154N, R97W, in McKenzie County, North Dakota (ND). The recreation area is approximately 26 miles north of Watford City and is accessed by a 300-foot-long paved road from ND Highway 1806. The MU contains approximately 84.56 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The MU is accessed by ND Highway 1806.

**Topography and Soils.** The topography in the Tobacco Garden Recreation Area consists of gently rolling slopes. Dominant soil types in the MU include Manning fine silty loam (0 to 6 percent slopes) and Zahl-Cabba-Maschetah complex (3 to 70 percent slopes). The Manning fine silty loam is somewhat excessively drained, and the Zahl-Cabba-Maschetah complex is well drained.

**Vegetation.** Vegetation consists mostly of crested wheatgrass and seeded lawn grasses, with some native and exotic grasses. Tree species include elm, plum, crabapple, and scattered small areas of willow and cottonwood along the water's edge. Russian olive has been planted in rows to provide a windbreak for the camping area.

**Fish and Wildlife.** Game birds and songbirds are present, with ring-necked pheasant being the most plentiful game bird. Many white-tailed deer, mule deer, and pronghorn live within and around the recreation area. Furbearing species near the area consist of beaver, mink, fox, and coyote.

**Visitation.** The number of visits recorded at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	14,925	2001	28,017
1996	16,827	2002	27,801
1997	20,467	2003	25,294
1998	21,718	2004	21,940
1999	18,512	2005	18,094
2000	16,717	2006	7,553

**Recreation.** This recreation area is operated by a concessionaire for camping and day use. This MU is a popular camping site, with water skiers, jet skiers, and fishermen using the area all summer. Ice fishing is also popular in the winter. The recreation area has 160 campsites, of which 30 have 20-amp electric hookups and 30 have 30-amp electric hookups. The campsites also have picnic tables and fire rings. Facilities at the area include a concession/bait shop/restaurant building, a dump station, a fish cleaning station, a playground, a picnic shelter, flush toilets, showers, a concrete boat ramp, and low-water ramps. There are docks and a fueling facility near the concrete boat ramp.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Other Important Past Management Activities.** In 1973, the Corps and McKenzie County cost-shared the initial recreation development, which consisted of roads, parking areas, picnic shelters, vault toilets, a comfort station, trash containers, and landscaping.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;

- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing access and circulation roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Provide separate day use and camping facilities;
- Upgrade the electrical service in the southern portion of the campgrounds;
- Replace the concession/restaurant building;
- Develop rental cabin facilities, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Additional paving of roads and parking areas;
- Develop a boat slip system as the water comes back;
- Develop a road across a small ravine to connect the two camping areas;
- Provide development opportunities to concessionaires for water-related activities;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Establish additional tree cover for shade and screening between campground and day use areas;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Reestablish native vegetation to enhance views and provide shade.

#### **7.124. CHARLSON WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 134**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Charlson Wildlife Area (WA) is shown on Sheet 17 (of 22) in Appendix A. It is located on the Charlson SW and Tobacco Garden Bay USGS topographic maps, in the SW ¼ of Section 31, T154N, R95W; Sections 33-36, T154N, R96W; and Section 3, T153N, R96W, in McKenzie County, North Dakota (ND). The WA extends from the east side of Sand Creek Bay approximately 4 miles east along the south shore of Lake Sakakawea. It is accessed from County Road 2 by unpaved roads approximately 2 miles long. The WA contains approximately 811.44

acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Charlson WA consists of gently to steeply rolling upland grassland terrace/bench and badlands. Dominant soil types in the MU include Bainville-Zahl, Farnuf loam (2 to 6 percent slopes), Williams-Zahl loams (3 to 9 percent slopes), Zahl-Cabba-Maschetah complex (3 to 70 percent slopes), Temvik-Williams silt loams (3 to 6 percent slopes), Chama-Cabba-Sen silt loams (9 to 15 percent slopes), Cabba-Badland, outcrop complex (9 to 70 percent slopes), Brandenburg-Cabba-Dogtooth complex (15 to 70 percent slopes), Brandenburg-Cabba-Badland, outcrop complex (9 to 70 percent slopes), Zahl-Cabba-Arikara complex (9 to 70 percent slopes), and Zahl-Williams-Cabba complex (6 to 15 percent slopes). The soils are well drained, with the exception of the Brandenburg-Cabba-Dogtooth complex and the Brandenburg-Cabba-Badland, outcrop complex, which are excessively drained.

Vegetation. Vegetation in this WA consists of native upland grasses and introduced grasses (primarily wheatgrass), biennial and perennial weeds, native forbs, and wildflowers. There are several patches of woodlands in addition to woody draws that contain native trees and shrubs. Lowland areas have numerous species of wetland plants including cattails, reed grass, rushes and sedges.

Fish and Wildlife. Mammals inhabiting the WA include white-tailed deer, mule deer, pronghorn, coyote, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many species of rodents. Upland game birds are abundant and include turkeys, ring-necked pheasants, and sharp-tailed grouse. Other avian species include songbirds, waterfowl, shorebirds, and raptors. This area of Lake Sakakawea provides outstanding walleye, sauger, and northern pike fisheries.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Hunting, including upland game and big game, is the primary recreational activity. Other activities include shore fishing, hiking, and wildlife viewing.

Other Important Past Management Activities. Prior to purchase by the Corps, this area was farmed and grazed. The entire WA was designated for wildlife management in the 1978 Master Plan. The entire southern boundary of the WA is adjacent to the Little Missouri National Grasslands (LMNG), which is managed by the US Forest Service. The LMNG lands are under a grazing plan/system with the McKenzie County Grazing Association. Lake Sakakawea is the sole source of water for livestock for two of the grazing allotments managed by the US Forest Service. The western end of the WA includes Sand Creek WMA lands that NDGFD turned back to the Corps for management in 1995 so that grazing could be more effectively regulated. The middle portion of the WA includes an area that was previously unofficially reclassified for vegetative management to accommodate agricultural and grazing leases. The easternmost 83 acres was previously a Corps-managed WA and contains no agricultural leases.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;

- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.



### **7.125. CHARLSON/ANTELOPE CREEK AGRICULTURAL AND OIL LEASES MGT. UNIT (MU): 135**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Charlson/Antelope Creek Agricultural and Oil Leases Vegetative MU is shown on Sheets 16 and 17 (of 22) in Appendix A. It is located on the Charlson SW and Charlson USGS topographic maps, in Sections 31-36, T154N, R95W; Sections 4-10, T153N, R94W; and Sections 31 and 32, T154N, R94W, all in McKenzie County, North Dakota (ND). The MU is located approximately 8 miles east of Tobacco Garden Bay. This MU is divided into three areas and encompasses approximately 1,092.08 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The area is accessed by graveled roads from ND Highway 23 and ND Highway 1806.

Topography and Soils. The topography in the MU has gently to steeply rolling slopes. Dominant soil types in the MU include Havrelon silt loam (0 to 2 percent slopes), Korchea loam, channeled (0 to 2 percent slopes), Korchea loam (0 to 2 percent slopes), Farnuf loam (2 to 6 percent slopes), Farnuf loam (6 to 9 percent slopes), Golva silt loam (2 to 6 percent slopes), Golva silt loam (6 to 9 percent slopes), Savage silty clay loam (2 to 6 percent slopes), Belfield-Savage silty clay loams (2 to 6 percent slopes), Williams-Zahl loams (6 to 9 percent slopes), Zahl-Williams loams (9 to 15 percent slopes), Temvik-Zahl complex (3 to 6 percent slopes), Cabba-Badland, outcrop complex (9 to 70 percent slopes), Cabba-Chama-Havrelon silt loam (3 to 70 percent slopes), Zahl-Cabba-Arikara complex (9 to 70 percent slopes), and Arikara-Shambo-Cabba loams (9 to 70 percent slopes). All of these soil types are well drained.

Vegetation. Vegetation in the MU consists of native upland and introduced grasses. Common in the MU are biennial and perennial weeds, native forbs, and wildflowers. There are many woody draws comprised of native trees and shrubs. Lowland areas have numerous species of wetland plants including cattails, reed grass, rushes, and sedges.

Fish and Wildlife. North Dakota mammals in the MU include white-tailed and mule deer, pronghorn, coyote, red fox, cottontail rabbits, skunk, badgers, raccoon, beavers, and many species of rodents. Upland game birds are abundant and include turkeys, pheasants, and sharp-tailed grouse. Other avian species include songbirds, waterfowl, shorebirds, and raptors. There are fewer terrestrial species due to heavy cattle grazing within the MU. This area of Lake Sakakawea also provides outstanding walleye, sauger, and northern pike fisheries.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Hunting, including upland game and big game hunting, is the primary recreational activity in the MU. Other activities include shore fishing, hiking and wildlife viewing.

Other Important Past Management Activities. This area was primarily used for grazing prior to acquisition by the Corps. Under Corps management, it has been grazed and cropped almost continuously. Due to underground gas and oil deposits, the Charlson portion of the area is heavily utilized by various petroleum companies. Minor spills have occurred but normally have been cleaned up immediately.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.126. CHARLSON LOW-DENSITY RECREATION AREA**

**MANAGEMENT UNIT (MU): 136**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Charlson Low-Density Recreation Area is shown on Sheet 17 (of 22) in Appendix A. It is located on the Charlson SW USGS topographic map, in the NE ¼ of Section 32, T154N, R95W, in McKenzie County, North Dakota (ND). The MU is located approximately 9 miles east of Tobacco Garden Bay, ND. It is accessed by a gravel county road 2 miles long from ND Highway 1806. The MU contains approximately 6.93 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Charlson Low-Density Recreation Area consists of gently rolling slopes. Dominant soil types include Havrelon silt loam (0 to 2 percent slopes) and Belfield-Savage silty clay loam (2 to 6 percent slopes). Both soil types are well drained.

Vegetation. Vegetation consists of native upland grasses and introduced grasses, biennial and perennial weeds, native forbs, and wildflowers. Plants in lowland areas may include cattails, reed grass, rushes, and sedges.

Fish and Wildlife. This area of Lake Sakakawea provides outstanding walleye, sauger, and northern pike fisheries. Mammals in the general area include white-tailed and mule deer, pronghorn, coyote, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many species of rodents. Avian species include turkeys, ring-necked pheasants, sharp-tailed grouse, songbirds, waterfowl, shorebirds, and raptors.

Visitation. The Corps does not record visitation for this area.

Recreation. This area offers opportunities for primitive camping and day use, but no facilities. Major day use activities include hunting, some shoreline fishing, hiking, and off-road vehicle (ORV) use. Signage, improved access and circulation roads, and recreation facilities will focus recreation use into sites compatible with the resource base.

Other Important Past Management Activities. The area in this MU was designated as a low-density recreation area in the 1978 Master Plan. The Corps developed no facilities and informally reclassified it for vegetative management.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and primitive camping;
- Provide separation of day use and primitive camping areas;
- Provide lake access for water-oriented recreation as appropriate;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide for adequate public road access and parking areas;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;

- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Develop an access road and parking area;
- Install at least one vault toilet that meets Americans with Disabilities Act standards;
- Use signage to delineate a primitive camping area separated from day use areas;
- Install picnic facilities for use by families and groups;
- Construct a boat ramp if appropriate in regard to site conditions and visitor needs;
- Provide separation between day use and primitive camping areas;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Install regulatory signage to identify activities that are acceptable and those that are prohibited (including ORV use);
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Establish additional tree cover for shade and screening between the primitive camping area and day use areas;
- Plant trees, shrubs, and native grasses for shade, wildlife food supply and habitat, and enhanced views;
- Control noxious weeds.

#### **7.127. CHARLSON/ANTELOPE CK. AG./OIL LEASES WILDLIFE AREA MGT. UNIT (MU): 138**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Charlson/Antelope Creek Agricultural and Oil Leases Wildlife Area (WA) is shown on Sheet 15 (of 22) in Appendix A. It is located on the Rat Lake SW, Rat Lake SE, Sanish, and Sanish NW USGS topographic maps, in Sections 7-9, T152N, R93W, in McKenzie County, North Dakota (ND). The WA is located on the south side of Antelope Bay and across Lake Sakakawea from Little Knife Bay. The WA contains approximately 262.26 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the WA consists of gently to steeply sloping uplands. Dominant soil types include Tonka-Hamerly complex (0 to 3 percent slopes), Arnegard loam (0 to 2 percent slopes), Dogtooth-Janesburg-Cabba complex (6 to 30 percent slopes), Williams-

Bowbells loams (3 to 6 percent slopes), Williams-Zahl loams (3 to 6 percent slopes), Zahl-Williams loams (9 to 25 percent slopes), Cabba-Badland, outcrop complex (9 to 70 percent slopes), and Zahl-Williams loams, dissected (15 to 45 percent slopes). All of these soil types are well drained, with the exception of Tonka-Hamerly complex, which is poorly drained, and Williams-Bowbells loams, which are moderately well drained.

Vegetation. Vegetation in this WA consists of native upland grasses, introduced grasses, biennial and perennial weeds, native forbs, and wildflowers. Woody draws contain native trees and shrubs. Lowland areas have numerous species of wetland plants including cattails, reed grass, rushes, and sedges.

Fish and Wildlife. Mammals found in this WA include white-tailed deer, mule deer, pronghorn, coyote, red fox, cottontail rabbit, skunk, badger, raccoon, beaver, and many species of rodents. Upland game birds including turkeys, ring-necked pheasants, and sharp-tailed grouse are abundant. Other avian species include songbirds, waterfowl, shorebirds, and raptors. This area of Lake Sakakawea provides an outstanding fishery for walleye, sauger, and northern pike.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Hunting, including upland game and big game, is the primary recreational activity in the WA. Other recreational activities include shore fishing, hiking and wildlife viewing.

Other Important Past Management Activities. This area was primarily used for grazing prior to purchase by the Corps. The WA was designated for wildlife management in the 1978 Master Plan but was later unofficially reclassified as a vegetative management area because much of the area was leased for agriculture and grazing.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;

- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.128. FOUR BEARS RECREATION AREA**

**MANAGEMENT UNIT (MU): 139**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Four Bears Recreation Area is shown on Sheet 15 (of 22) in Appendix A. It is located in Sections 15, 16, 21, and 22 of T152N, R93W, in McKenzie County, North Dakota (ND). The MU is located 3 miles west of New Town, ND. The Three Affiliated Tribes have a public park and recreation lease for the area between 1854 and 1850 feet above mean sea level (msl). The area is accessed by paved road. The MU contains approximately 417.38 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography of the area is a cross between rolling prairie and badlands, with the latter predominating. Soils in the area include Wabek gravelly loam (1 to 15 percent slopes), Harriet silt loam (0 to 1 percent slopes), Bowdle loam (1 to 6 percent slopes), and pits, which are areas from which the overlying soil material has been removed in order to mine sand, gravel, or coal.

Vegetation. Vegetation in the area is primarily Kentucky bluegrass. A variety of ornamental trees have been planted in and near the area for aesthetic purposes, while the native trees are primarily cottonwoods. Woody vegetation is sparse.

Fish and Wildlife. No significant wildlife or variety of species exists within this area due to the limited habitat diversity resulting from the extensive development in the vicinity.

Visitation. The U.S. Army Corps of Engineers (Corps) does not record visitation for this MU.

Recreation. This area is managed to support recreation activities, including boating, fishing, and camping. Nearby facilities for recreational use include a high water boat ramp, a low water boat ramp, boat refueling, boat docks, a concession building, a developed campground with electric hookups, a playground, picnic shelters, flush toilets, a dump station, and a fish cleaning station.

Other Important Past Management Activities. The portion of the recreation area above elevation 1854 feet msl was transferred to the Bureau of Indian Affairs in the summer of 1992 to be held in trust for the Three Affiliated Tribes.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide concessionaire marina facilities and services;
- Improve existing access and circulation roads and parking areas;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs in and near this recreation area include the following, not in priority order:

- Add boat dock and slips;
- Install facilities for boat, jet ski, and paddleboat rentals;
- Move road to the east on the south side of the celebration grounds;
- Develop a marina, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.129. BEAR DEN LOW-DENSITY RECREATION AREA      MANAGEMENT UNIT (MU): 141**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. Three Affiliated Tribes

Location. The Bear Den Low-Density Recreation Area is shown on Sheet 14 (of 22) in Appendix A. It is located on the Sanish SW USGS topographic map, in Sections 15 and 16, T150N, R94W, in McKenzie County, North Dakota (ND). The MU is located on the western end of Bear Den Bay, ND. The MU currently contains approximately 192.94 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). There is no public access to this low-density recreation area; it is reached from ND Highway 22 by a dirt trail 0.5 miles long.

Topography and Soils. The topography in the Bear Den Recreation Area consists of gently to steeply sloping terrain. Dominant soil types include Korchea loam, channeled (0 to 2 percent slopes), Williams-Zahl loams (6 to 9 percent slopes), Zahl-Williams loams (9 to 15 percent slopes), Zahl-Cabba-Arikara complex (9 to 70 percent slopes), and Cabba-Badland, outcrop-Arikara complex (9 to 70 percent slopes). All of these soil types are well drained.

Vegetation. This low-density recreation area is slightly more heavily vegetated than most badlands. The upland grassland ecosystem is in fair condition despite overgrazing. The bottomland drainage supports a dense stand of cottonwoods and willows.

Fish and Wildlife. The area has the potential to provide high quality habitat for a wide variety of species, particularly if it is fenced and access by livestock and off-road vehicles remains restricted.

Visitation. The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	568	2001	Not available
1996	505	2002	Not available
1997	466	2003	Not available
1998	383	2004	Not available
1999	Not available	2005	Not available
2000	Not available	2006	Not available

Recreation. The Bear Den Low-Density Recreation Area was not being actively managed for recreation at the time this Master Plan/EA was prepared, and recreational use in this area was limited to shoreline fishing and upland and big game hunting. Facilities at this MU consist of a picnic area with a shelter and table and a pit toilet.

Other Important Past Management Activities. The Corps determined that two parcels and a portion of a third, totaling 57 acres, in this MU were excess to project purposes. The Corps disposed of the land to the General Services Administration (GSA) in December 1991. GSA transferred this land to Bureau of Indian Affairs in the summer of 1992 to hold in trust for the



Three Affiliated Tribes. Potential creation of a wetland complex within this area was investigated in the 1990s by the Corps, the Bureau of Reclamation, and the Three Affiliated Tribes.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Manage the lands for the benefit of the public;
- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve access and circulation roads;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Construct a public access road to the recreation area;
- Provide development opportunities to concessionaires for water-related and land-based activities;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.130. SKUNK CREEK RECREATION AREA**

**MANAGEMENT UNIT (MU): 143**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Skunk Creek Recreation Area is shown on Sheet 12 (of 22) in Appendix A. It is located on the String Buttes USGS topographic map, in Sections 3 and 10 of T147N, R87W, in Dunn County, North Dakota (ND). The recreation area is located about 25 miles east of the city of Mandaree, ND and contains approximately 159.47 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet

above mean sea level (msl). It is accessed by a gravel road, and there are about 2.5 miles of gravel/dirt roads within the recreation area.

**Topography and Soils.** The topography in the Skunk Creek Recreation Area consists of moderately sloping terrain that gradually drops to the shoreline. Soil types consist of Cabba-Badland complex, Cohagen-Vebar fine sandy loams, Zahl-Williams loams, and Badland-Cabba-Arikara complex. Several wooded coulees and a variety of gradual and steeper sloping hills are present. The area is on the fringe of the southeastern badlands region of North Dakota.

**Vegetation.** Vegetation consists of woody draws of green ash, boxelder, and cottonwood, and scattered pockets of shrubs mixed in with exotic and native grasses.

**Fish and Wildlife.** Game birds and songbirds are present within and around the recreation area. Red fox and coyotes have also been seen within the recreation area boundaries. The area would be suitable for big game habitat. At the present time there are no known threatened and endangered species at this area or development potential for wetlands or fisheries habitat.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 2002 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	Not available	2001	Not available
1996	Not available	2002	3,738
1997	Not available	2003	7,063
1998	Not available	2004	17,734
1999	Not available	2005	16,048
2000	Not available	2006	16,108

**Recreation.** This recreation area is operated for camping and day use. It is used by visitors for water access, fishing, boating, and some camping. Facilities at this MU consist of a concession building, a boat ramp, a gas pump, rental cabins, a primitive campground, and vault toilets. A privately owned residential subdivision is adjacent to the recreation area.

**Other Important Past Management Activities.** This area was previously managed by the Corps and the Three Affiliated Tribes as a grassland (vegetative) management area. The land classification was changed to Recreation by Master Plan Supplement 5, approved in December 1989, which established the recreation area.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;

- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing access and circulation roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Construct a fish cleaning station;
- Install a courtesy dock;
- Upgrade and expand the breakwater by the low water boat ramp;
- Construct a retaining wall in the low water boat ramp area to control erosion of the beach area;
- Construct an access road to the boat ramp;
- Construct a parking area for cars and boat trailers at the boat ramp;
- Upgrade access roads to accommodate campers and recreational vehicles (RVs);
- Construct a light entrance point at the mouth of the bay;
- Install treated water facilities and restroom facilities that meet Americans with Disabilities Act standards;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.131. MCKENZIE BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 144**

Land Classification. Recreation

Managing Agency. Watford City Park Board (public park and recreation area)  
McKenzie Marine Club (50 trailer-site lots)

Location. The McKenzie Bay Recreation Area is shown on Sheets 8 and 9 (of 22) in Appendix A. It is located on the Hay Flat and Saddle Butte SW USGS topographic maps, in Sections 26, 27, and 34-36 of T147N, R87W, in Dunn County, North Dakota (ND). The MU is located about 30 miles northwest of Killdeer, ND and contains approximately 382.66 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by Bureau of Indian Affairs (BIA) Road 15, which is paved except for the last 3 miles, which has a gravel surface. The McKenzie Marine Club has an access easement with the landowner on the Reservation; this allows for public access on the 1-mile road segment located on private land.

**Topography and Soils.** The topography in the McKenzie Bay Recreation Area consists of moderately sloping terrain that gradually drops to the shoreline. Several wooded coulees are present, along with a variety of gradual and steeper hills. Soil types found in the area include Cherry-Vanda, Cherry silty clay loam, Cabba-Badland, Cabba loam, Cohagen-Vebar, Zahl-Williams, Straw loam, and Rhoades-Cabba.

**Vegetation.** Vegetation includes wooded coulees that consist predominantly of green ash, boxelder, and cottonwood with underbrush. Ponderosa pine, Russian olive, Caragana, buffaloberry, lilac, black walnut, and Colorado blue spruce have been planted by members of the McKenzie Marine Club.

**Fish and Wildlife.** Game birds, fox, and coyotes are present within and around the recreation area. The area also has excellent waterfowl habitat and has potential for big game habitat. The area is not classified as critical fish habitat.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	12,209	2001	37,929
1996	12,939	2002	38,193
1997	28,110	2003	39,331
1998	28,507	2004	28,863
1999	31,527	2005	25,002
2000	34,353	2006	28,855

**Recreation.** This recreation area is operated by a concessionaire for camping and day use. The concessionaire operates a small restaurant facility with flush toilet and meeting room. The concessionaire also has 5 rental cabins/trailers, a storage building, and a dock with 3 fuel pumps. There is a group camping area with 9 picnic tables and fire rings as well as a 48-site developed campground with 30-amp electric hookups, a shower house, and dump station. Other facilities include 3 boat ramps, a parking lot, a fish cleaning station, and a playground. Portable toilets are located throughout the recreation area. Non-developed areas have dispersed camping and off-road vehicle usage. A cottage area with 50 trailers owned by members of the McKenzie Marine Club is maintained by the McKenzie Marine Club, which leases the trailer-site lots from the Corps.

**Other Important Past Management Activities.** The recreation area began as a massive trailer encroachment on project lands, which the Corps converted into a leased cottage site and a public recreation area.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreation opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Improve the boat ramp access road, circulation roads, and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade the campground areas;
- Replace portable toilets with vault toilets if cost-sharing funds are available;
- Provide better security lighting;
- Asphalt the road to the boat ramp and other areas;
- Widen the new boat ramp 6' x 200';
- Update the gas dock;
- Update the retaining wall;
- Develop a walking path;
- Provide additional facilities if needed to meet public demand;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses to enhance views, shade, and wildlife food supply and habitat.

### **7.132. LOST BRIDGE RECREATION AREA**

**MANAGEMENT UNIT (MU): 146**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Lost Bridge Recreation Area is shown on Sheet 10 (of 22) in Appendix A. It is located on the Lost Bridge USGS topographic map, in the N 1/2 of the NE 1/4 of Section 35, T147N, R95W, in Dunn County, North Dakota (ND). Lost Bridge is approximately 30 miles north of the town of Killdeer, ND. The MU contains approximately 35.83 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). There has been no public access to the MU from Highway 22 since construction of a new bridge was completed in 1994.

Topography and Soils. The topography in the Lost Bridge Recreation Area is mostly level, sloping to the shoreline of the Little Missouri River. Soil types consist of Trembles Variant, Cherry-Cabba, and Havrelon silt loam. The area is surrounded by badlands and wooded coulees.

Vegetation. Vegetation consists of cottonwood, green ash, and box elder mainly along the river embankment. Underbrush and prairie grasses also exist within the recreation area.

Fish and Wildlife. Upland game species and small mammals utilize the area for cover and forage. The area is also utilized by big game, including mule deer. Adjacent to the recreation area are pasturelands grazed by livestock. Livestock have been known to encroach within the recreation area.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers at this recreation area during fiscal years 1995 through 1998 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	1,045	2001	Not available
1996	1,029	2002	Not available
1997	957	2003	Not available
1998	187	2004	Not available
1999	Not available	2005	Not available
2000	Not available	2006	Not available

Recreation. The Lost Bridge Recreation Area was previously operated for day use and primitive camping. At the time this Master Plan/EA was prepared, recreational use in this area is was limited to shoreline fishing and upland and big game hunting and no recreation facilities were located at this MU.

Other Important Past Management Activities. The Lost Bridge was built to provide access across the Little Missouri River. For the first several years of existence the bridge was used by cattle passing over the river because there were no roads to the bridge. The Corps issued a public park and recreation lease for the area to the Three Affiliated Tribes in 1984. The Tribe requested assistance in fencing out the area to stop illegal grazing. In the spring of 1992, fencing supplies were given to the Tribe to fence out the area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Manage the lands for the benefit of the public;
- Provide for public access for visitors;
- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Maintain the area against encroachments and unauthorized grazing;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;

- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Develop a public access road and parking area;
- Improve day use facilities including picnic tables, toilets and fencing;
- Provide development opportunities to concessionaires for water-related and land-based activities;
- Upgrade interpretive displays and educational materials for visitors;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.133. LITTLE MISSOURI GRASSLANDS WILDLIFE AREA**

**MU: 147**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Missouri Grasslands Wildlife Area is shown on Sheets 9 and 10 (of 22) in Appendix A. It is located on the Saddle Butte SW, Halliday NW, Mandaree SE, Mandaree SW, and Lost Bridge USGS topographic maps, in Sections 31, T147N, R92W; Sections 19, 29, 30, and 32-36, T147N, R93W; Sections 22-24, and 27, T147N, R94W; Sections 2, 11, and 12, T147N, R95W; and Sections 29-34, T148N, R5W, all in Dunn County, North Dakota (ND). The MU is located mainly along the south shore of the Little Missouri Arm of Lake Sakakawea. The MU is accessed by traveling east or west from the Little Missouri Recreation Area or by traveling north 21 miles from Killdeer, ND on State Highway 22. The MU contains approximately 3,065.77 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU includes high ridges, buttes, near-vertical cliffs, and deep coulees; mudflats can also be found adjacent to the lake if water levels are relatively low. Dominant soil types include Banks loamy sand (1 to 3 percent slopes), Cherry silty clay loam (1 to 6 percent slopes), Cherry silty clay loam (6 to 9 percent slopes), Trembles Variant fine sandy loam (0 to 1 percent slopes), Havrelon silt loam (0 to 1 percent slopes), Havrelon silt loam, channeled (0 to 3 percent slopes), Vanda silty clay (1 to 3 percent slopes), Cherry-Cabba complex (9 to 25 percent slopes), and Badland-Cabba-Arikara complex (25 to 120 percent slopes). Most of these soil types are well drained, with the exception of Banks loamy sand, which is somewhat excessively drained; and Trembles Variant fine sandy loam, which is poorly drained.

Vegetation. The mixed grass prairie is the dominant vegetation type in the MU. Trees are located along the river bottom and in coulees. Bare ground is found in the badlands and lake bed. Leafy spurge can be found in scattered patches in or near willow stands.

Fish and Wildlife. Mule and white-tailed deer are the primary big game species in the MU. Wapiti use the bottomlands in the MU as a wintering area. Other game species include turkey, ring-necked pheasants, Hungarian partridge, sharp-tailed grouse, cottontail rabbits, and squirrels. Predators include golden eagles, bald eagles, prairie falcons, burrowing owls, coyote, bobcats, red fox, swift fox, and badgers. Beavers constructed a large dam across Big Jim Creek. The MU is the site of three prairie dog colonies covering over 125 acres. Various species of rodents and songbirds also use the MU.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The primary recreational activities in the MU include hunting for big game, upland game, and furbearers; fishing; horseback riding; hiking; and sightseeing. Canoeing occurs on the Little Missouri River during periods of high water. Some shoreline fishing also takes place when the lake level is high. Off-road vehicle (ORV) use has occurred in the vicinity of Lost Bridge along Highway 22 where vehicle trails lead both east and west from the highway to the MU. A corral, a small storage building, and a pit toilet were constructed in the MU near its boundary with the Little Missouri Grasslands Low-Density Recreation Area for use in the commercial trail riding business that operates in the area. A two-track trail west of this Low-Density Recreation Area is used by ranchers to access their grazing leases, by equestrians, and by ND Parks and Recreation Department staff for maintenance access to remote areas of the adjacent Little Missouri Primitive State Park.

Other Important Past Management Activities. Historically, the MU has been leased to area ranchers for livestock grazing. The Corps allowed the former landowner, Jack Fettig, to continue to use a corral he installed just east of ND Highway 22 south of Lost Bridge. After Mr. Fettig died, the Corps allowed day-use equestrians to use the corral. The corral was scheduled to be removed from Corps project lands by the end of 2008.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;



- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.134. LITTLE MISSOURI GRASSLANDS LOW-DENSITY REC. AREA      MGT. UNIT (MU): 148**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Missouri Grasslands Low-Density Recreation Area is shown on Sheet 10 (of 22) in Appendix A. It is located on the Mandaree SW USGS topographic map, in Sections 7, 8, 17, 18, 19, 20, 21, 28, 29, and 32, T147N, R94W, in Dunn County, North Dakota (ND). The MU is located along the Little Missouri Arm of Lake Sakakawea about 8 miles west of Little Missouri Bay. It is accessed by a paved road 2 miles long from ND Highway 22. The MU contains approximately 1,145.70 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Little Missouri Grasslands Low-Density Recreation Area consists of moderately to steeply sloping slopes. Dominant soil types include Cherry-Cabba complex (9 to 25 percent slopes) and Badland-Cabba-Arikara complex (25 to 120 percent slopes). Both soil types are well drained.

Vegetation. Mixed-grass prairie is the largest vegetation type in the MU. Trees are found along the Little Missouri Arm and in coulees. Some areas are badlands and have little or no vegetation. Leafy spurge, a noxious weed, can be found in scattered patches in or near willow stands.

Fish and Wildlife. Mule deer and white-tailed deer are the primary big game species in the MU. Wapiti use the MU bottomlands as a wintering area. Other game species include turkeys, ring-necked pheasants, Hungarian partridge, sharp-tailed grouse, cottontail rabbits, and squirrels. Predators include golden eagles, bald eagles, prairie falcons, burrowing owls, coyotes, bobcats,

red foxes, swift foxes, and badgers. Various species of rodents and songbirds are found throughout the MU. Beavers and prairie dogs are also found in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. This area offers opportunities for primitive camping and day use, but currently there are no recreation facilities. Major day use activities include hunting, hiking, and horseback riding; shoreline fishing also occurs when Lake Sakakawea pool levels are relatively high. A local trail riding business takes horseback riders down on to the MU from the Little Missouri Primitive State Park (SP). The ND Parks and Recreation Department, which manages the SP, has an easement 4.77 miles long in this MU for an equestrian trail in the MU that connects with an equestrian trail in the SP. This trail could also be used for mountain biking. Because this MU is located between the shoreline of the Little Missouri Arm and the SP, it is anticipated that many visitors to this MU would also visit the SP.

Other Important Past Management Activities. The area in this MU was designated as a low-density recreation area in the 1978 Master Plan. The Corps developed no facilities and informally reclassified it as a vegetative management area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and primitive camping;
- Provide separation of day use and primitive camping areas;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide for adequate public road access and parking areas;
- Provide opportunities for hunting;
- Promote non-consumptive uses of resources such as horseback riding, mountain biking, hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Develop an access road and parking area;
- Develop an equestrian trail that connects with equestrian areas in the adjacent SP;
- Install at least one vault toilet that meets Americans with Disabilities Act standards;
- Use signage to delineate a primitive camping area separated from day use areas;
- Install picnic facilities for use by families and groups;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;

- Install regulatory signage to identify activities that are acceptable and those that are prohibited;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, horseback riding, photography, and sightseeing;
- Plant trees, shrubs, and native grasses for shade, wildlife food supply and habitat, and enhanced views;
- Control noxious weeds.

### **7.135. LITTLE MISSOURI RECREATION AREA**

**MANAGEMENT UNIT (MU): 149**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Little Missouri Recreation Area is shown on Sheet 9 (of 22) in Appendix A. It is located on the Mandaree SE USGS topographic map in Sections 34 and 35, T147N, R93W, and Sections 2 and 3, T146N, R93W, in Dunn County, North Dakota (ND). The MU is located on the right bank of the Little Missouri Arm of Garrison Reservoir. It is approximately 16 miles northeast of Dunn Center. The MU contains approximately 220.04 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by ND Highway 200.

Topography and Soils. The topography in the Little Missouri Recreation Area is referred to as the Little Missouri badlands. The Little Missouri badlands area is a deeply eroded, rugged belt bordering the Little Missouri River from the North Dakota-South Dakota border to its confluence with the Missouri River. The badlands are most prominent in the western portion of the Little Missouri. The shallow and deep bedrock areas of the MU contain Cherry-Cabba Complex, a grayish-brown silty clay soil. The upland buttes that overlook the site contain Badland-Cabba-Arikara, which consists of eroding soft bedrock, clay, and silt. Silt deposition is occurring in the Little Missouri Arm near the MU and has converted open water to mudflats; this situation is worsened by drought-influenced low lake elevations.

Vegetation. Vegetation in the area consists of boxelder, green ash, elm, and cottonwood. Chokecherry, American plum, western sandcherry, and juneberry are present along the edge of wooded areas. Buckbrush, sage, dwarf wild indigo, and rabbitbush also exist on site surrounded by prairie. Prickly pear cactus is located on hillsides, buttes, and clay flats. Russian olive has naturalized on some formerly grazed sites. Most of the vegetation is drought tolerant and will grow in soil with a pH ranging from 6.1 to 9.0.

Fish and Wildlife. Wildlife consists of small and big game species and numerous song and game birds.

**Visitation.** The number of visits recorded by the Corps at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	31,426	2001	19,305
1996	26,381	2002	8,012
1997	34,393	2003	2,589
1998	33,684	2004	1,135
1999	38,108	2005	Not available
2000	29,799	2006	Not available

**Recreation.** The Little Missouri Recreation Area has recently been operated as a primitive camping and minimum-maintenance day use recreation area. Facilities at the MU include 2 boat ramps, a water well, and a pumphouse building. Visitation and the viability of concessionaire management of the area were greatly affected by drought. The concessionaire's facilities were removed, and the Corps moved its traffic counter to a newly developed recreation area where visitation was increasing. At the time this Master Plan/EA was prepared, the public access road was in very poor condition and the recreation area was closed to the public by a locked gate.

**Other Important Past Management Activities.** This recreation area used to be operated by a concessionaire for camping and day use. Recreational activities in the area included developed and primitive camping, fishing, boating, swimming, sightseeing, picnicking, and hiking. Facilities within the MU included a restaurant, concession building, a bait shop, fuel, boat storage, dock and ramp, drinking water, camping, electrical hookups, showers, cabin rentals, vault toilets, picnic shelters and tables, a playground, a fish cleaning station, and a sanitary dump station.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, photography, wildlife observation, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Provide separate day use and camping areas;
- Replace the vault toilets to meet Americans with Disabilities Act (ADA) standards;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Maintain and gravel interior roads as needed;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation, bird watching, hiking, sightseeing, and photography;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

### **7.136. CHARGING EAGLE RECREATION AREA**

**MANAGEMENT UNIT (MU): 151**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Charging Eagle Recreation Area is shown on Sheets 8 and 9 (of 22) in Appendix A. It is located on the Saddle Butte SW USGS topographic map, in Sections 3 and 4 of T147N, R92W, in Dunn County, North Dakota (ND). The MU is about 15 miles north and west of Twin Buttes, ND, from which it is accessed by gravel road. The MU contains approximately 90.77 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this area is flat and gradually drops to 1850 feet msl elevation, the shoreline at maximum normal operating pool. Several wooded coulees are present and a variety of gradual and steeper hills surround the recreation area. The area is on the southeast fringe of the badlands region of North Dakota. Soils are predominantly Cherry silty clay loam, Amor-Cabba loams, Cohagen-Vebar fine sandy loams, and Badland-Cabba-Arikara complex.

Vegetation. Grasslands are the dominant ecosystem in this MU, with a plant community that includes native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Coulees harbor junipers and green ash and a mixture of shrubs and grasses. Residents of the trailers in the MU have developed lawns.

Fish and Wildlife. Game birds, songbirds, and small mammals are present within and around the MU.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	14,235	2001	27,213
1996	15,254	2002	28,178
1997	15,958	2003	24,548
1998	16,916	2004	23,805
1999	28,348	2005	26,651
2000	26,065	2006	26,372

**Recreation.** Recreational uses include boating, fishing, and other activities associated with a cottage site. Facilities at this MU include high and low water boat ramps, boat docks, camping areas, picnic areas, and vault toilets. There are 55 legalized trailers in this MU.

**Other Important Past Management Activities.** The Corps determined that a 3-acre parcel in this MU was excess to project purposes and disposed of the land to the General Services Administration (GSA) in December 1991. The GSA transferred this land to the Bureau of Indian Affairs (BIA) in the summer of 1992 to hold in trust for the Three Affiliated Tribes.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide concessionaire marina facilities and services;
- Improve existing access and circulation roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, horseback riding, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

**Development Needs.** Development needs for this recreation area include the following:

- Construct an additional boat ramp;
- Add 40 feet of concrete on the upper portion of the low water boat ramp;
- Dredge if needed to maintain boat access;

- Upgrade and extend boat ramps as necessary;
- Construct a breakwater for the low water boat ramp;
- Upgrade temporary and permanent boat ramp turnarounds with gravel surfacing;
- Pave the boat ramp turnarounds and parking areas;
- Enlarge and riprap the parking area at the permanent boat ramp;
- Install a new courtesy dock for the temporary ramp;
- Develop a boat dock storage area;
- Develop a boat mooring area;
- Install a boat rental and storage facility;
- Construct a fish cleaning station with utilities;
- Construct a concession store;
- Develop pads and camping areas for recreational vehicles (RVs);
- Develop primitive camping and picnic areas;
- Upgrade the picnic and camping areas;
- Install additional vault toilets;
- Develop 2 miles of hiking trails;
- Develop a riding trail;
- Provide appropriate protection for any cultural resources;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat;
- Control noxious weeds.

#### **7.137. BEAR CREEK BAY LOW-DENSITY RECREATION AREA**

**MGT. UNIT (MU): 153**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Bear Creek Bay Low-Density Recreation Area is shown on Sheets 8 and 9 (of 22) in Appendix A. It is located on the Hay Flat USGS topographic map, in the southern half of Sections 1 and 2, T147N, R92W, in Dunn County, North Dakota (ND). The MU is located on the western side of Bear Creek Bay, near the confluence of the Little Missouri Arm with Lake Sakakawea. The MU can be accessed by a short gravel road that crosses private land, but there was no public access road at the time this Master Plan was prepared. The MU contains approximately 349.34 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Bear Creek Bay Low-Density Recreation Area consists of gently to moderately sloping uplands, with some severe slopes in badlands areas. Dominant soil types include Cherry-Cabba complex (9 to 25 percent slopes) and Badland-Cabba-Arikara complex (25 to 120 percent slopes). Both soil types are well drained.

Vegetation. The upland plateaus contain native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Scattered among the grasslands are small pockets of shrubs and trees. In the woody draws dissecting the grasslands are green ash, box elder, cottonwood, and a variety of shrubs. The coulees and protected slopes in the badlands areas contain junipers, green ash, and some birch trees.

Fish and Wildlife. The MU is used by a variety of big and small game including mule deer, white tailed deer, pronghorn antelope, coyotes, red fox, mink, raccoon, and cottontail rabbit. It is a

year-round home for ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds. The inlets along the shore are used in the spring, summer, and fall by waterfowl and shorebirds as a nesting, brood raising, and staging site. Golden eagles, hawks, owls, and vultures hunt and forage in the MU. Several of the inlets are used as spawning grounds for several species of fish.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. This area offers opportunities for primitive camping and day use. Major day use activities include hunting, shoreline fishing, picnicking, and hiking. There were no recreation facilities at the time this Master Plan/EA was prepared. Signage and facilities will focus recreation use into resource-compatible sites.

Other Important Past Management Activities. This area was a low-density recreation area in the 1978 Master Plan. It was under lease to the Dunn County Boy Scouts, but they did not develop a camp there. The Corps installed no facilities and informally reclassified the area for vegetative management.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities;
- Provide facilities for family and group day use activities and primitive camping;
- Provide separation of day use and primitive camping areas;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide for public access and circulation roads and parking areas;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Develop a public access road and parking areas;
- Install at least one vault toilet that meets Americans with Disabilities Act standards;
- Use signage to delineate a primitive camping area separated from day use areas;
- Install picnic facilities for use by families and groups;
- Construct a boat ramp with dock;



- Provide separation between day use and primitive camping areas;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Install regulatory signage to identify activities that are acceptable and those that are prohibited (including ORV use);
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Establish additional tree cover for shade and screening between the primitive camping area and day use areas;
- Plant trees, shrubs, and native grasses for shade, wildlife food supply and habitat, and enhanced views;
- Control noxious weeds.

#### **7.138. LAKESHORE NEAR MAHTO COTTAGE SITE**

**MANAGEMENT UNIT (MU): 154**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore near Mahto Cottage Site is shown on Sheet 7 (of 22) in Appendix A. It is located on the Raub SE USGS topographic map in the N1/2 of the NE1/4 of Section 13, T147N, R90W, in Mercer County, North Dakota (ND). The MU is about 10 miles east of the town of Twin Buttes, ND and contains approximately 6.63 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). Less than a mile of gravel road is within the Mahto Cottage Site itself, which is adjacent to Corps project lands. There is no official public access to the MU, but there is an informal agreement between the cabin owners and the Three Affiliated Tribes for access, and no traffic on the access road has been stopped.

Topography and Soils. The topography is comprised of rolling hills and wooded coulees. The dominant soil type is Baahish fine sandy loam.

Vegetation. Prairie grass is the major vegetation type in the MU, but trees and shrubs dominate the coulees.

Fish and Wildlife. Adjacent to the cottage site are pasture lands currently being grazed by livestock. The area is not designated as critical habitat for the pallid sturgeon. Upland game species, songbirds and small mammals use the area for cover and forage. The area may also be used periodically by larger game, such as white-tailed deer. The area has no known state or federally listed threatened and endangered species, or wetland development potential.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Mahto Cottage Site, with occasional shoreline fishing. Shoreline use is authorized for this area in the Shoreline

Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. After the cottage lots were sold by the Corps, Mercer County obtained a permit from the Bureau of Indian Affairs (BIA) and constructed an access road to the recreation area and the cottage sites. The easement rights were cancelled after a year by the BIA due to lack of new signatures on the easements. Mercer County, the Mahto Cottage Association, and the Corps have been unable to reach an agreement with the owners of the land over which the road passes to obtain a legal easement.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Continue to pursue provision of public access;
- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

### **7.139. RED BUTTE BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 155**

Land Classification. Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Red Butte Bay Recreation Area is shown on Sheet7 (of 22) in Appendix A. It is located on the Raub SE USGS topographic map, in the N 1/2 of the NE 1/4 of Section 23, R90W, T147N, in Mercer County, North Dakota (ND). The MU is located 10 miles east of the town of Twin Buttes on the west shore of Red Butte Bay. The MU contains approximately 24.29 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). There is no public road access to the MU.

Topography and Soils. The topography in the Red Butte Bay Public Use Area is comprised of rolling hills and wooded coulees on the interior, while cut banks are predominate around the shoreline. Soils consist mainly of Vebar fine sandy loam.

Vegetation. Vegetation in the area includes a mix of prairie grasses with some trees and shrubs found in the coulees.

Fish and Wildlife. Upland game species, song birds, and small mammals utilize the area for cover and forage. At the present time there are no known threatened and endangered species at this area for fisheries habitat. Pasturelands that are currently grazed by livestock are adjacent to the public use area.

Visitation. The Corps does not record visitation for this recreation area.

Recreation. Due to a lack of public access, the MU has minimal recreational use. The boat ramp receives occasional use by residents of the Mahto Cottage Site. Existing facilities within the recreation area consist of a boat ramp, gravel road, and parking lot but are not maintained.

Other Important Past Management Activities. The Corps determined that a 1-acre parcel in this MU was excess to project purposes and disposed of the land to the General Services Administration (GSA) in December 1991. The GSA transferred this land to the Bureau of Indian Affairs (BIA) in the summer of 1992 to hold in trust for the Three Affiliated Tribes. In May 1992 the Corps officially closed the recreation area due to lack of public access and removed a picnic shelter and two pit toilets.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide recreation facilities for family and group day use activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Construct a public access road;

- Maintain the area against encroachments and unauthorized grazing;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Continue tree planting and hazard tree maintenance programs for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade access and interior roads as needed after obtaining a public road easement;
- Continue to construct or improve boat ramps;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide wildlife habitat improvements that also enhance activities such as wildlife observation and interpretation, bird watching, hiking, sightseeing, and photography;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses to enhance views, shade, and wildlife food supply and habitat.

#### **7.140. TWIN BUTTES RECREATION AREA**

**MANAGEMENT UNIT (MU): 157**

Land Classification. Recreation

Managing Agency. Three Affiliated Tribes

Location. The Twin Buttes Recreation Area is shown on Sheet 7 (of 22) in Appendix A. It is located on the Raub SE USGS topographic map, in the S 1/2 of the SE 1/4 of Section 26, T147N, R90W, in Mercer County, North Dakota (ND). Twin Buttes is approximately 18 miles north of Golden Valley, ND. The MU contains approximately 98.56 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed from ND Highway 8 by an asphalt Bureau of Indian Affairs road, also called an Indian Service Road.

Topography and Soils. Twin Buttes Recreation Area is located next to a streambed connecting with Lake Sakakawea. The topography in the area consists of semi-level ground gradually sloping towards the Lake. The MU is surrounded by slight hills on the eastern and western sides. The dominant soil type in the area is Amor extremely stony loam.

Vegetation. Vegetation consists of prairie grasses and lowland hardwood trees, particularly cottonwoods, with underbrush.

Fish and Wildlife. Wildlife in the area consists mainly of upland game birds and song birds along with small mammals.

**Visitation.** The number of visits recorded by the U.S. Army Corps of Engineers at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	550	2001	8,153
1996	512	2002	7,807
1997	484	2003	8,391
1998	477	2004	8,754
1999	879	2005	8,766
2000	8,372	2006	278

**Recreation.** The Twin Buttes Recreation Area is managed for day use and primitive camping. The area is used annually during the summer for the Twin Buttes Pow Wow celebration. Recreational activities in the area include primitive camping, fishing, and swimming. Facilities within the MU consist of beaches along the edge of Lake Sakakawea, picnic shelters, vault toilets, trailer spaces, 4 recreational vehicle camping pads with electrical hookups, fencing, and tree plantings.

**Other Important Past Management Activities.** The surrounding area is open to grazing by livestock, which have been known to encroach within the recreation area.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Manage the lands for the benefit of the public;
- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve access and circulation roads;
- Maintain the area against encroachments and unauthorized grazing;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

**Development Needs.** Development needs for this recreation area include the following, not in priority order:

- Improve day use and camping facilities including additional picnic tables, camping spaces, toilets, and fencing;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;

- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide appropriate protection for any cultural resources;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.141. BEAVER CREEK BAY RECREATION AREA**

**MANAGEMENT UNIT (MU): 158**

Land Classification. Recreation

Managing Agency. Zap Park Board

Location. The Beaver Creek Bay Recreation Area is shown on Sheet 6 (of 22) in Appendix A. It is located on the Beulah NE USGS topographic map, in Section 17, T146N, R89W, in Mercer County, North Dakota (ND). The MU is located about 14 miles north of Zap, ND. The MU contains approximately 65.04 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by paved road from ND Highway 1806. Roads within the MU are all gravel.

Topography and Soils. The topography in the Beaver Creek Bay Recreation Area consists of rolling hills that gradually drop in elevation to 1850 feet above mean sea level (msl), the maximum normal operating pool, on the shoreline. Several wooded coulees are present to the south of the recreation area. Soils are predominately Arnegard loam and Williams loam.

Vegetation. Vegetation includes wooded coulees that consist predominantly of green ash, boxelder, and cottonwood with underbrush. Pheasants Forever has also planted a shelterbelt containing Ponderosa pine, Russian olive, Caragana, and buffaloberry just off the south end of the recreation area.

Fish and Wildlife. The area is used by a variety of big and small game, including mule deer, white-tailed deer, pronghorn antelope, coyotes, red fox, mink, raccoon, and cottontail rabbit. Ring-necked pheasant, Hungarian partridge, grouse, and several species of rodents and songbirds are year-round residents. The inlets along the shore are used in the spring, summer, and fall by waterfowl and shorebirds for nesting, brood raising, and staging. Hawks, owls, and vultures hunt and forage in the area.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	17,674	2001	20,941
1996	13,724	2002	36,923
1997	16,654	2003	17,150
1998	19,630	2004	15,425
1999	20,817	2005	11,791
2000	22,171	2006	14,906

Recreation. This recreation area is operated for primitive camping and day use. This MU is a popular boat launching and fishing site. The area has 25 primitive camping sites, 2 group picnic shelters, fishing access, a vault toilet, a boat ramp functional at normal water levels, and 2 low water boat ramps. Non-developed areas have dispersed camping. Use of off-road vehicles is allowed only on designated roads.

Other Important Past Management Activities. A casino complex was previously proposed on land adjacent to this MU. No support facilities other than an access road, sewer lines, water lines, and electrical lines would be allowed to be sited on Corps public lands.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade the campground areas by installing electricity and camper pads;
- Update the vault toilets;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Establish additional tree cover for shade;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

**7.142. LOWER REGION WEST WILDLIFE MANAGEMENT AREAS (WMA'S):**

**HILLE WMA**

**MANAGEMENT UNIT (MU): 159**

**BEAVER CREEK WMA**

**MANAGEMENT UNIT (MU): 159**

Land Classification. Multiple Resource Management: Wildlife Management General

Management Agency. North Dakota Game and Fish Department (NDGFD)

Location. The Beaver Creek and Hille WMA's are shown on Sheets 5 and 6 (of 22) in Appendix A. The MU contains approximately 3,584.46 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The leases for Hille WMA and Beaver Creek WMA are for areas at or above an elevation of 1850 feet msl; the leased areas are 3,083.2 acres and 284.8 acres, respectively.

The Beaver Creek WMA is located on both sides of Beaver Creek Bay, 12 miles north of Zap, ND and borders the Fort Berthold Reservation on the north and west sides. Access to Beaver Creek WMA is provided by the access road to the adjacent Beaver Creek Bay Recreation Area.

The Hille WMA is located on the south side of Lake Sakakawea in Mercer County, ND, from Renner Bay to Hazen Bay. A small parcel at the northwestern end of Hille WMA lies within the Fort Berthold Reservation. Access to Hille WMA is provided by roads accessing the Hazen Bay/Walleye Bay Recreation Area, Beulah Bay Recreation Area, and Dakota Waters Resort/Lake Shore Park, which are adjacent to Hille WMA, as well as by paved and graveled county and township roads.

Topography and Soils. The eastern part of the MU consists of upland areas dissected by drainage valleys and coulees. The soils here are undulating to steep, shallow to deep, and well drained. These soils formed in material weathered from soft bedrock, glacial till, and loess. In the western part of the MU, the topography flattens to gentle hills and ridges. The soils here are nearly level or undulating, deep, well drained, and formed in material weathered from glacial till and loess. Hille WMA contains some steep cliffs along the shoreline due to erosion by Lake Sakakawea; over 253 acres have eroded away.

Vegetation. The vegetation system of the MU is dominated by grasslands, which cover over 70 percent of the lands and include native and introduced annual grasses, biennial and perennial weeds, native forbs, and wildflowers. Due to numerous coulees, woody draws containing green ash, box elder, cottonwood, and a variety of shrubs comprise a relatively high portion (10 percent) of the vegetative cover in the MU. The MU also contains about 145 acres of block and row tree plantings. There are several agricultural fields, farmed under cooperative agreements to create wildlife food plots, primarily in the western half of Hille WMA. During drought, when water levels are low, there can be problems with Canada thistle in areas above 1850 feet msl and salt cedar in areas managed by the U.S. Army Corps of Engineers (Corps) below 1850 feet msl.

Fish and Wildlife. White-tailed deer use the MU as a resting, feeding, and fawning area. Other resident mammals include mule deer, cottontail rabbit, red fox, coyote, skunk, badger, raccoon, beaver, and many species of rodents; occasionally pronghorn may be found. Bird species include turkey, ring-necked pheasant, Hungarian partridge, mourning dove, waterfowl, raptors, and many species of songbirds.

Visitation. The Corps does not record visitation for these wildlife management areas.



Recreation. Hunting, including upland and big game, is the primary recreational activity in the MU. Hiking, photography, wildlife observation, and bird watching also occur. In Hille WMA, shore and ice fishing are popular at Renner Bay, and boat fishing is popular at Beulah, Expansion, and Hazen bays. Little shoreline fishing occurs at Beaver Creek WMA.

Other Important Past Management Activities. Some areas of Hille WMA are seasonally grazed by lessees as a means of maintaining the vigor of the grasslands. Along the Expansion Bay shoreline at Hille WMA, Corps personnel forced removal of unauthorized boat docks belonging to residents of several trailer parks located adjacent to project lands.

Cultural Resources. Prior to any future development at or near these wildlife management areas, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for these wildlife management areas include the following, not in priority order:

- Manage wildlife and fishery resources to support propagation of the species;
- Encourage hunting and related outdoor recreation opportunities;
- Promote non-consumptive uses of resources such as hiking, photography, bird watching, wildlife observation, and sightseeing;
- Permit other compatible recreation activities;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Protect, conserve, and/or improve habitat for a variety of wildlife species, including threatened and endangered species;
- Maintain and improve the quality and diversity of vegetative resources to provide food and cover for a variety of wildlife species;
- Promote water quality and reduce erosion by stabilizing the shoreline if needed;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for these wildlife management areas include the following, not in priority order:

- Increase grassland quality by rotation grazing in the eastern portion of the MU and haying/grazing on most of the western portion of the MU, using the best available methods in accordance with the management plans for each WMA;
- Continue to contract with adjacent landowners to establish wildlife food plots;
- Control noxious weeds, especially Canada thistle and salt cedar;
- Provide appropriate protection for any cultural resources;
- Enhance water quality and wildlife habitat by monitoring for any encroachments by livestock at Hille WMA;
- 
- Reduce disturbance to wildlife by monitoring against encroachments by boat dock owners at Hille WMA;
- Continue to restrict vehicular access to Hille WMA shorelines to reduce destruction of habitat, disturbance to wildlife, and impacts of litter on aesthetics and public health;
- Monitor all-terrain vehicle use at the Hille WMA and control it by installing signage and/or fencing if needed.

**7.143.**

**MANAGEMENT UNIT (MU): 160**

Other Important Past Management Activities. Management Unit 160 has been incorporated into Management Unit 159 and no longer exists.

**7.144. DAKOTA WATERS RESORT/LAKE SHORE PARK**

**MANAGEMENT UNIT (MU): 161**

Land Classification. Recreation

Managing Agency. Beulah Park Board; third-party agreements with Lake Shore Estates Lot Owners Association (24.71 acres) and with Dakota Waters Resort (19.53 acres)

Location. Dakota Waters Resort/Lake Shore Park is shown on Sheet 6 (of 22) in Appendix A. It is located on the Beulah NE USGS topographic map in Sections 8 and 9 of T146N, R87W, in Mercer County, North Dakota (ND). The MU is about 15 miles north of Beulah, ND. The MU contains approximately 21.82 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The MU is accessed by paved road from ND Highway 1806.

Topography and Soils. Topography in this area consists of flat terrain that drops off steeply near the water's edge to 1850 feet msl elevation, the maximum normal operating pool, on the south side of the concession building. A brush coulee is present to the north of the concession building and is filled with water at normal pool elevations. Dominant soil types are Mandan silt loam, Cabba loam, and Grassna silt loam.

Vegetation. A variety of grasses grow throughout the leased area. One old ND Game and Fish Department mitigation tree planting is located to the east of the campground. The coulees contain cottonwoods and box elders.

Fish and Wildlife. Game birds and songbirds are present within and around the recreation area. Rodents and other small mammals occupy the MU. Occasionally deer will wander through the area.

Visitation. The number of visits recorded at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	24,989	2001	56,014
1996	21,813	2002	45,917
1997	33,501	2003	38,844
1998	41,391	2004	41,272
1999	37,506	2005	37,016
2000	30,856	2006	36,062

Recreation. Dakota Waters Resort/Lake Shore Park is managed as a recreation resort. Camping and boating are the primary recreation activities. The MU has a developed campground with 55 campsites, 41 of which have electric hookups. Additional facilities include a boat ramp, a marina, a gas dock, a concession building with showers, a snack bar, a fish cleaning station, a

playground, flush toilets, a dump station, a picnic shelter, a comfort station, a bait station, log cabin rentals, a storage building, and a maintenance shop.

Other Important Past Management Activities. This area previously had a land classification of Wildlife Management. The land classification was changed to Recreation by Master Plan Supplement 4, approved in April 1988, which established the recreation area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Replace the courtesy dock;
- Replace the gas dock, above ground fuel storage tank, and dispensing system;
- Replace sections of the low water ramp;
- Stabilize the shoreline between the ramp and concessions building;
- Chip seal the parking lot;
- Install concrete pads on all developed campsites;
- Install 10 additional electric hookups;
- Install a vault toilet in the east camping area;
- Replace/update playground equipment;
- Provide additional facilities if needed to meet public demand;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## 7.145. BEULAH BAY RECREATION AREA

## MANAGEMENT UNIT (MU): 162

Land Classification. Recreation

Managing Agency. Beulah Park Board

Location. The Beulah Bay Recreation Area is shown on Sheets 5 and 6 (of 22) in Appendix A. It is located on the Beulah NE and Blackwater Lake SE USGS topographic maps, in Section 33, T146N, R87W, and Section 4, T147N, R87W, in Mercer County, North Dakota (ND). The MU is about 17 miles north of Beulah, ND and contains approximately 208.33 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl); these are included in the 461.8 “blocked out” acres of land and water cited in the lease. Access to developed areas is by several miles of paved road from ND Highway 1806. Access to non-developed areas is by about a mile of graveled road.

Topography and Soils. The topography in the Beulah Bay Recreation Area consists of flat terrain that gradually drops to 1850 feet msl elevation, the maximum normal operating pool, on the eastern shorelines. Several wooded coulees are present. The upland flat areas contain shelterbelts, and the northern shoreline breaks into vertical banks. Dominant soil types are Mandan silt loam and Cabba loam.

Vegetation. Vegetation includes wooded coulees that consist predominantly of green ash, boxelder, and cottonwood with underbrush. Ponderosa pine, Russian olive, Caragana, buffaloberry, lilac, and Colorado blue spruce have been planted in numerous shelterbelts.

Fish and Wildlife. Game birds and songbirds are present within and around the recreation area. A wildlife planting is located just to the south of the road accessing the Lewis and Clark interpretive site.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

<b>Fiscal Year</b>	<b>Number of Visits</b>	<b>Fiscal Year</b>	<b>Number of Visits</b>
1995	28,411	2001	53,633
1996	23,332	2002	38,111
1997	22,679	2003	40,466
1998	29,736	2004	48,093
1999	32,373	2005	54,415
2000	37,387	2006	56,611

Recreation. This recreation area is operated by a concessionaire for camping and day use. There is a 71-site developed campground, of which 24 sites have 30-amp electric hookups and 34 sites have 50-amp electric hookups. The campground also has picnic tables, fire rings, and three pedestal grills. Other facilities at the recreation area include a boat ramp, a dump station, a fish cleaning station, 3 group picnic shelters, 4 restrooms with showers and flush toilets, playground equipment, and a Lewis and Clark interpretive sign. Non-developed areas have dispersed camping. Off-road vehicle use is allowed only in designated areas, for purposes of shoreline access.

Other Important Past Management Activities. This area previously had severe off-road vehicle use. Much of that was curtailed by the planting of trees, signage, and blocking off the problem areas. Road development has also reduced the amount of random driving in the area.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Develop a new well to trench water to electrical campsites;
- Build an equipment storage building;
- Construct a playground;
- Install a privacy fence for the vault toilet by the boat ramp;
- Install new street signs;
- Replace campsite posts;
- Place cigarette receptacles around campsites;
- Extend the boat ramp;
- Replace the caretaker office;
- Build a convenience store if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Add a rental cabin if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Add a picnic shelter;
- Build an additional restroom/shower house or add onto the existing one;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Stabilize the shoreline if needed to control erosion or protect recreation facilities;
- Provide appropriate protection for any cultural resources;

- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.146. LAKESHORE NEAR BEULAH BAY TRAILER SITES      MANAGEMENT UNIT (MU): 163**

Land Classification. Multiple Resource Management: Recreation – Low Density

Management Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near the Beulah Bay trailer sites is shown on Sheet 6 (of 22) in Appendix A. It is located on the Beulah NE USGS topographic map in the SE ¼ of Section 4 and the NE ¼ of Section 9, T146 N, R87W, in Mercer County, North Dakota (ND). The MU consists of two geographically separated parcels about 14 miles north of the city of Beulah, ND and contains approximately 25.11 acres calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). Adjacent subdivisions include the Hafner, Kasper, and Boeshans subdivisions. In each subdivision adjacent to the MU, there is less than a mile of gravel road for access purposes. There is public access to the MU. Access to the three sites varies from 1 to 3.5 miles of pavement and gravel county roads from ND Highway 1806, but the last 0.5-mile of each of the two entrance roads is private.

Topography and Soils. The topography consists of rolling hills and steeper cliff edges next to some of the shoreline. Soils are predominately Zahl loam, Bowdle loam, and Cabba loam.

Vegetation. Prairie grass and associated vegetation are dominant in the MU. Several boundary line areas are delineated with lilac bushes and trees. Several wooded coulees are located in and the subdivision. Other wooded areas consist of shelterbelt plantings.

Fish and Wildlife. Game birds, songbirds, rodents, and other small mammals are present in the MU. Large mammals, such as coyotes and white-tailed deer, occasionally use the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area, with occasional shoreline fishing. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.147. SOD HOUSE HISTORIC SITE**

**MANAGEMENT UNIT (MU): 164**

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Sod House Historic Site is shown on Sheet 6 (of 22) in Appendix A. It is located on the Beulah NW USGS topographic map in the E½ of the SE¼ of Section 4, T146N, R87W, in Mercer County, North Dakota (ND). This MU is located 0.5 mile south of the Beulah Bay Recreation Area. Vehicle access to the boundary of this MU is by a prairie trail from the road accessing the Beulah Bay Recreation Area. The MU contains approximately 12.83 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The MU is located on top of a hill that slopes gently down to the shore of Lake Sakakawea. The soils in this MU are from the Cabba-Williams-Temvik association and are composed of Bowdle loams and Zahl loams. Shoreline erosion is a problem, as 2 acres have been eroded to bare ground by the wave action of the lake.

Vegetation. Grasses dominate the MU, with some shrubs present. One stand of trees is found near the north shore. Kochia and Canada thistle can be found near the shoreline during low lake levels.

Fish and Wildlife. The MU is used by white-tailed deer, cottontail rabbit, ring-necked pheasant, Hungarian partridge, and several species of rodents and songbirds on a year-round basis.

Visitation. The Corps does not record visitation for this environmentally sensitive area.

Recreation. The major recreational uses that occur in the MU are shore fishing and sightseeing. The focus of sightseers is on two buildings found at this site. The buildings are protected by barbed wire fences, and a fence across the peninsula prevents vehicles from driving up to the buildings. Joseph Boeshans, a Russian immigrant, constructed the buildings in the late 1890s when he homesteaded the area. The west building was Boeshans' home, and to the east was a sod granary and barn. The house had three rooms and was constructed by alternating layers of sod and sandstone. Two cottonwood trunks served as the roof support, and tree limbs were used for the rafters. Brush and sod comprised the roof. The Boeshans family lived in the house until 1916, after which renters occupied it until 1948. Since 1948, the buildings have deteriorated from exposure to the elements. The roof of the house collapsed in 1972. Nothing remains of the sod barn that was built on the site.

Other Important Past Management Activities. In the late 1980s, the cellar of the house and a concrete structure with three walls, which had been constructed into the bank, were identified as safety hazards. They were filled with rock and sand.

Cultural Resources. Prior to any future development at or near this environmentally sensitive area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this environmentally sensitive area include the following, not in priority order:

- Evaluate historic property sites for eligibility to be listed on the National Register of Historic Places (NRHP);
- Maintain, monitor, and protect scientific, ecological, or aesthetic resource sites while meeting other project resource objectives;
- Preserve, monitor, and protect any cultural, archaeological, and historical resources;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Provide a resource-oriented recreation opportunity in as natural an environment as possible;
- Promote non-consumptive uses of natural resources such as resource interpretation, hiking, bird watching, photography, and sightseeing;
- Manage vegetation resources for wildlife habitat and the conservation of resources;
- Preserve and/or restore wildlife habitat for a variety of species, including federally listed threatened and endangered species;
- Ensure no net loss of wetlands or native prairie;
- Promote ecological integrity by controlling noxious weeds;
- Manage resources in cooperation and coordination with other management agencies and appropriate entities in the private sector.



Development Needs. Development needs for this environmentally sensitive area include the following, not in priority order:

- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide bank stabilization for archaeological, paleontological, and historical sites threatened by erosion;
- Provide appropriate protection for any cultural resources;
- Provide educational outreach opportunities appropriate for these areas;
- If any historic property sites are determined eligible for the NRHP, install improved fencing around the site and then develop and implement an interpretation plan for the site to include public access, a small parking lot, and interpretive signs;
- Delineate the boundary with monuments and markers;
- Install signage and/or fencing if needed to reduce vehicular damage to vegetation;
- Establish barriers or buffers as needed to protect the integrity of environmentally sensitive areas;
- Enhance and create habitat for federally listed threatened and endangered species and/or State species of concern;
- Preserve, enhance, and restore native prairie and wetlands;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods.

#### **7.148. HAZEN BAY/WALLEYE BAY RECREATION AREA      MANAGEMENT UNIT (MU): 165**

Land Classification. Recreation

Managing Agency. Hazen Park Board

Location. The Hazen Bay/Walleye Bay Recreation Area is shown on Sheet 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map, in Sections 7, 33, and 34, T147N, R87W, in Mercer County, North Dakota (ND). The recreation area is located about 15 miles north of Hazen, ND. The MU contains approximately 227.67 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The recreation area is accessed by a two-lane paved road. Access to interior developed areas is approximately 1 mile of gravel roads.

Topography and Soils. The topography in the recreation area is generally flat and gradually drops to 1838 feet msl elevation, the maximum normal operating pool, on the eastern shoreline. Soils are predominately Temvik-Williams silt loams and Cabba loam.

Vegetation. Vegetation in this area includes upland prairie and wooded coulees that consist predominately of green ash, box elder, evergreen and cottonwood with various underbrush varieties.

Fish and Wildlife. Game birds and songbirds are present within and around the subdivisions. Rodents and other small mammals also live in this area. Large mammals such as coyotes and deer occasionally use the area.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this recreation area during fiscal years 1995 through 2006 are presented in the following table. A fiscal year extends from October 1 through September 30 of the next calendar year.

Fiscal Year	Number of Visits	Fiscal Year	Number of Visits
1995	17,980	2001	26,989
1996	16,099	2002	36,157
1997	13,439	2003	33,128
1998	14,441	2004	18,362
1999	20,496	2005	23,716
2000	21,031	2006	24,150

**Recreation.** This recreation area is operated by a concessionaire for camping and day use. There is a 60-site developed campground, of which 32 sites have 30-amp and 28 sites have 50-amp electric hookups. The campground also has picnic shelters, a concessionaire operation, and flush toilets. Other facilities at the recreation area include a dump station, a boat ramp, and a fish cleaning station. Non-developed areas include dispersed camping. Vehicles may be used only on designated roads. A low-water boat ramp is located in the Walleye Bay portion of the recreation area.

**Other Important Past Management Activities.** The Walleye Bay portion of the recreation area was formerly managed by the Corps and had a land classification of Multiple Resource Management: Recreation-Low Density. Low lake levels resulted in greatly increased use of the Walleye Bay area because it was a low-water lake access point, and the Hazen Park Board requested that the Walleye Bay area be added to their lease. The increase in visitation made it desirable to have on-site management and visitor controls consistent with a land classification of Recreation.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

**Resource Objectives.** Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing and boating and other water-oriented recreation;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Improve existing access and circulation roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Extend the boat ramp using concrete;
- Widen the boat ramp for dual launching;
- Install a courtesy light above the boat ramp;
- Install a vault toilet at the parking area near the boat ramp;
- Update the boat docking system;
- Create a walking path from parking areas to the docking system;
- Add a slip system for boat docking rental;
- Develop a marina if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Provide development opportunities to concessionaires for water-related activities;
- Develop a day use picnic area by or near the parking area;
- Construct an open air picnic shelter in the day use picnic area;
- Pave the entrance road;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide appropriate protection for any cultural resources;
- Plant trees and shrubs along the boat ramp access road;
- Plant trees along the access road and parking area;
- Plant trees and shrubs in the day use picnic area;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.149. SAKAKAWEA EAST GRASSLAND #1**

**MANAGEMENT UNIT (MU): 166**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Sakakawea East Grassland #1 Vegetative MU is shown on Sheets 1 and 5 (of 22) in Appendix A. It is located on the Emmet SE topographic map in Sections 25-27 and 34-36, T147N R86W; and Sections 19, 30 and 31, T147N R85W, in Mercer County, North Dakota (ND). The MU is on the south shore of Lake Sakakawea, about 6 miles west and 1 mile north of Pick City, ND and follows the shoreline about 3 miles west. This MU is bordered on the west by Hazen Bay/Walleye Bay Recreation Area and on the east by Ellwein Estates Subdivision. The entire south side of the MU is bordered by privately owned land. The MU is accessed by 3 miles of graveled county road from ND Highway 200. The MU contains approximately 753.32 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of rolling hills and steep valleys and draws, each of which has a deep, protected bay at the bottom. The upland hills are composed of Mandan and Tervik-Williams silt loams (1 to 9 percent slopes). These soils consist of deep, well drained, level to rolling glacial till. The valleys and draws are composed of Cappa-Badland

complexes (15 to 50 percent slopes). These soils consist of steep, shallow, and well drained material formed from glacial till and weathered bedrock.

Vegetation. Vegetation in the upland area consists of native and introduced annual grasses, biennial and perennial weeds, and native forbs. Native wildflowers are found throughout the MU. The riparian areas are composed of native and introduced deciduous and coniferous trees and shrubs. Two tree plantings are located within the MU. The remaining woody habitat consists of stands of native tree species or scattered patches of voluntary introduced tree species.

Fish and Wildlife. The area is used by white-tailed and mule deer, wild turkey, antelope, pheasant, grouse, partridge, squirrels, rabbits, other furbearers, and various rodents. The area is also used by nesting geese and waterfowl, songbirds, shorebirds, and raptors.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in the MU consist mainly of shore fishing and hunting for upland game, waterfowl and big game. Some swimming and trapping for furbearers has also occurred.

Other Important Past Management Activities. In the past, most of this MU was leased for agricultural and grazing purposes, but currently the Corps actively manages most of the MU. Boundary fencing and gate closures of several public access roads have been implemented to resolve illegal livestock grazing, ORV use, and other encroachments. In 1992, an adjacent landowner improved a road to increase lake accessibility, but this road was closed to public access because it crosses private land.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.150. LAKESHORE NEAR ELLWEIN ESTATE SUBDIVISION      MANAGEMENT UNIT (MU): 167**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Ellwein Estate Subdivision is shown on Sheets 1 and 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in Section 30, T147N, R85W, in Mercer County, North Dakota (ND). The MU is located about 7 miles west of Pick City, ND and contains approximately 28.91 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The site is accessed by 3 miles of graveled county road from ND Highway 200. The access road extends down a steeply graded hill to the water's edge; however, under wet conditions, this road would be inaccessible in a two-wheel-drive vehicle.

Topography and Soils. The topography along the shoreline has some steep cliff edges, as well as hilly terrain gradually sloping to the shoreline. A number of woody coulees are found within the area. Dominant soil types are Temvik-Williams silt loam, Zahl-Williams loam, Zahl loam, and Cabba loam.

Vegetation. Vegetation consists of upland prairie with woody draws containing green ash, boxelder, and shrubs.

Fish and Wildlife. Game birds, songbirds, and white-tailed deer are present in the area. Beavers have previously damaged trees in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Ellwein Estate Subdivision, with occasional shoreline fishing. The MU contains no developed recreation facilities for public use. Shoreline use is authorized for this area in the Shoreline Management

Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Prior to the development of the Ellwein Estate Subdivision, the MU was originally leased for livestock grazing. After the adjacent landowner developed a subdivision on his property, the Corps public lands adjacent to the subdivision were managed for low-density recreation.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.151. SAKAKAWEA EAST GRASSLAND #2**

**MANAGEMENT UNIT (MU): 168**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Sakakawea East Grassland #2 MU is shown on Sheets 1 and 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in Sections 19, 20, 29 and 30, T147N, R85W, in Mercer County, North Dakota (ND). This MU is bordered on the west by Ellwein Estates Subdivision, on the east by Rolling Hills Estates Subdivision, and on the south by privately owned land. The MU is located 4 miles west and 2 miles north of Pick City, ND. The site is accessed by approximately 3 miles of graveled county road from ND Highway 200. Vehicular access into this MU is limited to one private driveway through an adjacent farm. The MU contains approximately 181.48 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of gently sloped uplands that are composed of Mandan silt loams (1 to 6 percent slopes). The riparian areas leading to the lake shore consist of Cabba loams (15 to 35 percent slopes) that are eroded and steep. All soils in the MU are from the Cabba-Williams-Temvik group, which are undulating to steep, shallow, well drained soils formed from weathered bedrock and glacial till.

Vegetation. Vegetation in the upland area consists of native and introduced annual grasses, biennial and perennial weeds, and native forbs. Many species of wildflowers grow in the grassy areas, and deciduous and coniferous trees grow on the west side of the MU. The riparian areas consist of native deciduous trees and shrubs, with some native coniferous shrubs scattered throughout. Much of the shoreline is infested with Kochia, Canadian thistle, and Russian thistle.

Fish and Wildlife. This area is used by white-tailed and mule deer, pheasant, grouse, partridge, squirrels, rabbits, songbirds, raptors, furbearers, and occasionally antelope. Waterfowl can also be found in the MU in the summer and fall months.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. Recreational activities in the MU include shoreline fishing and upland game and big game hunting. However, limited access to the MU has restricted these and most of the other recreational activities. Although most of the MU boundary is unfenced, there have been few problems with off-road vehicle (ORV) use in the area because of limited access. Some ORV use is generated by residents of the adjacent cottage sites.

Other Important Past Management Activities. Most of the MU was formerly used for grazing and haying. Currently there is only one agricultural lease, located on the upland area of the MU. In 1991, the Corps removed two beaver populations, one of which was located within this MU, after Ellwein Estates Subdivision residents complained about tree damage caused by the local beavers.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.152. LAKESHORE NEAR ROLLING HILLS ESTATES SUBDIVISION      MGT. UNIT (MU): 169**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Rolling Hills Estates (Isaac's) Subdivision is shown on Sheets 1, 4, and 5 (of 22) in Appendix A. It is located on the Emmet SE USGS topographic map in Section 20, T147N, R85W, in Mercer County, North Dakota (ND). The MU is about 6 miles west of Pick City, ND and contains approximately 11.65 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean



sea level (msl). The site is accessed by 3 miles of graveled county road from ND Highway 200 and extends to the water's edge.

Topography and Soils. The topography is mostly cliffs. Dominant soil types are Mandan silt loam, Zahl-Williams loam, and Cabba loam.

Vegetation. Vegetation consists of upland prairie and woody draws of green ash, boxelder, and shrubs.

Fish and Wildlife. Game birds and songbirds are present in and around the area. The area is not designated as critical pallid sturgeon habitat.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Rolling Hills Estates Subdivision, with occasional shoreline fishing. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The MU originally was leased for livestock grazing. After the adjacent landowner developed a subdivision on his property, Corps public lands adjacent to the subdivision were managed for low density recreation, because livestock grazing was no longer an appropriate use.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

**Development Needs.** Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

### **7.153. SAKAKAWEA EAST GRASSLAND WILDLIFE AREA      MANAGEMENT UNIT (MU): 170**

**Land Classification.** Multiple Resource Management: Wildlife Management General

**Managing Agency.** U.S. Army Corps of Engineers (Corps)

**Location.** The Sakakawea East Grassland Wildlife Area (WA) is shown on Sheets 1, 4, and 5 (of 22) in Appendix A. It is located on the Emmet SE and Garrison Dam North topographic maps, in Sections 15, 21 and 22, T147N, R85W, in Mercer County, North Dakota (ND). This WA is bordered on the west by the lakeshore area near Rolling Hills Estates Subdivision, on the east by the Sakakawea Low-Density Recreation Area, and on the south by Pick City #2 Grassland Wildlife Area and privately owned land. The WA is located 2 miles west and 2 miles north of Pick City, ND. The WA contains approximately 175.91 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by the gravel road that leads north from ND Highway 200 approximately 2 miles west of Pick City, the same road that accesses Pick City #2 Cabin Site and Camp Sakakawea.

**Topography and Soils.** The topography in the WA is largely flat to gently sloped uplands, which are composed of Mandan silt loam with slopes of 1 to 3 percent. The north side of the WA near the lakeshore is a series of riparian valleys and steep slopes. The soil in this area is Cabba loam, with slopes of 15 to 35 percent. The soils in the entire WA are from the Cabba-Williams-Temvik group, which is undulating to steep, shallow, well drained soil formed from weathered bedrock and glacial till.

**Vegetation.** The upland portions of this WA consist of native and introduced annual grasses, biennial and perennial weeds, and native forbs. The grasslands also support many species of native wildflowers. Five old coniferous and deciduous tree plantings and one new tree planting, which has been covered with weed barrier, are located within this WA. The riparian areas consist mainly of native deciduous and coniferous trees and shrubs. Much of the shoreline is infested with Kochia, Canadian thistle, and Russian thistle.

**Fish and Wildlife.** The WA is inhabited by upland game species such as pheasant, grouse, partridge, squirrels and rabbits. The area is used by white-tailed deer, mule deer, antelope, and wild turkey. The tree plantings support various non-game songbirds, raptors, furbearers and rodents. Canada geese and several species of waterfowl use the area for nesting and brood raising

in the summer months. The lake shoreline is used by several species of shorebirds for feeding and nesting.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The WA has been used heavily for hunting of upland and big game species in the fall months. Some shoreline fishing also occurs on a regular basis. Because of the access road going through the WA, wildlife watching and photography also occur on a regular basis.

Other Important Past Management Activities. The western portion of this WA contains leases for grazing purposes. The Corps and Knife River Chapter of Pheasants Forever have planted trees and wildlife food plots in the eastern portion of the WA. A stone building that may have some historic value is located in the WA. Approximately 151.75 acres of land adjacent to Camp Sakakawea was previously part of this WA but was reclassified for low-density recreation during the process of preparing the updated Master Plan/EA to better provide for additional recreation facilities to meet future public recreation needs.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Evaluate historic property sites for eligibility to be listed on the National Register of Historic Places (NRHP);
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;
- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Install fencing and/or signage if needed to reduce vehicular damage to vegetation;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.154. SAKAKAWEA LOW-DENSITY RECREATION AREA      MANAGEMENT UNIT (MU): 171**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Sakakawea Low-Density Recreation Area is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the E 1/2 of Section 22, T147N, R85W, in Mercer County, North Dakota (ND). The MU is located approximately 2 miles northwest of Pick City, ND. It is accessed by a gravel road. The MU contains approximately 151.75 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU consists of gently to steeply sloping uplands. Dominant soil types include Mandan silt loam (1 to 3 percent slopes) and Cabba loam (15 to 35 percent slopes). Both are well drained soils.

Vegetation. Vegetation consists of native prairie grass on the slopes and lower elevations and small brushy plants in the draws. Hillside vegetation consists primarily of crested wheatgrass.

Conifers were planted here in the 1970s, and shelterbelts of deciduous trees and shrubs were planted more recently.

Fish and Wildlife. This area is used by white-tailed deer, coyote, red fox, mink, raccoon, sharp-tailed grouse, ring-necked pheasant, and gray partridge. A variety of waterfowl, shorebirds, raptors, and songbirds can be found in this MU.

Visitation. The Corps does not record visitation for this low-density recreation area.

Recreation. This area offers opportunities for primitive camping and day use, but there are currently no recreation facilities. Hunting of upland and big game species occurs here in the fall, and some tent camping occurs in the summer. Some shoreline fishing also occurs on a regular basis. Wildlife watching and photography also occur regularly by travelers using the Camp Sakakawea access road that traverses through the MU. There have been problems with off-road vehicle (ORV) use in the area. Signage and recreation facility development will focus recreation use into resource-compatible sites.

Other Important Past Management Activities. This area was a grassland (vegetative) management area in the 1978 Master Plan. The Corps informally reclassified it for wildlife management. The Corps and the Knife River Chapter of Pheasants Forever have planted trees and wildlife food plots. Fencing was installed to reduce the amount of ORV use, but some fences were cut by people seeking vehicle access to the shoreline.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities;
- Provide facilities for family and group day use activities and primitive camping at sites that do not adversely impact cultural resources;
- Provide separation of day use and primitive camping areas;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Provide access and circulation roads and parking areas;
- Provide opportunities for hunting on adjacent project lands;
- Promote non-consumptive uses of resources such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Maintain and/or improve wildlife habitat for a variety of species;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Develop a circulation road and parking areas;

- Install at least one vault toilet that meets Americans with Disabilities Act standards;
- Use signage to delineate a primitive camping area separated from day use areas;
- Install picnic facilities for use by families and groups;
- Construct a boat ramp with dock;
- Provide separation between day use and primitive camping areas;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Install regulatory signage to identify activities that are acceptable and those that are prohibited (including ORV use);
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Provide access for hunting on adjacent project lands;
- Establish additional tree cover for shade and screening between the primitive camping area and day use areas;
- Plant trees, shrubs, and native grasses for shade, wildlife food supply and habitat, and enhanced views;
- Control noxious weeds.

#### **7.155. CAMP SAKAKAWEA**

**MANAGEMENT UNIT (MU): 172**

Land Classification. Recreation

Managing Agency. Girl Scouts of Sakakawea Council

Location. Camp Sakakawea is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the N 1/2 of Section 23 and SW 1/4 of Section 14, T147N, R85W, in Mercer County, North Dakota (ND). The MU is located approximately 7 miles west of Pick City, ND, just northeast of the Pick City #2 Cottage Site. The MU contains approximately 202.65 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed by a gravel road that leads north from ND Highway 200 approximately 2 miles west of Pick City.

Topography and Soils. The topography in the Camp Sakakawea area consists of relatively level uplands cut by numerous wooded and brushy intermittent drainages. Dominant soil types are Cabba loam (15 to 35 percent slopes) and Mandan silt loam (1 to 3 percent slopes) along with Temvik-Williams silt loams (3 to 6 percent slopes) and Mandan silt loam (3 to 6 percent slopes).

Vegetation. Vegetation consists of native prairie grass on the slopes and lower elevations and small brushy plants in the draws. Hillside vegetation consists primarily of crested wheatgrass. Many portions of this area have been planted to belts of deciduous trees and shrubs.

Fish and Wildlife. This area is used by white-tailed deer, coyote, red fox, mink, raccoon, sharp-tailed grouse, ring-necked pheasant, and gray partridge. A variety of waterfowl, shorebirds, raptors, and songbirds can be found in this MU.

Visitation. The U.S. Army Corps of Engineers does not record visitation for this MU.

Recreation. This recreation area is managed mostly for Girl Scout group camping. Primitive camping occurs on a limited basis. Other recreational activities that occur within this MU include swimming, shore fishing, and some big game and upland game hunting. Facilities at the area include a clubhouse, a dock, a cabin, pit toilets, shelters, picnic tables, a shower building, and fire rings.

Other Important Past Management Activities. Due to vandalism and continued off-road vehicle use in the area, a gate has been installed on the main access road. The gate is kept locked except when Girl Scout members are using the area. Approximately 10 acres of the MU is planted to wildlife food plots, 30 acres of the MU is hayed every year, and an additional 15 acres is hayed in alternate years.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Install a latrine and shower house that meet Americans with Disabilities Act (ADA) standards;
- Improve signage to the camp;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Scout camps have temporal separation between cabin use and day use areas;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

## **7.156. SAKAKAWEA BAY TREE FARM WILDLIFE AREA      MANAGEMENT UNIT (MU): 173**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Sakakawea Bay Tree Farm Wildlife Area (WA) is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North topographic map, in Sections 13, 14, 19, 23 and 24, T147N, R85W, and Section 19, T147N, R84W, in Mercer County, North Dakota (ND). The MU consists of the northern half of the northern peninsula of Sakakawea Bay. Three islands are located east of the peninsula. A small island to the south of the peninsula point is connected to the Sakakawea Girl Scout Camp during low water periods. The eastern-most island, Prairie Dog Island, is directly north of Lake Sakakawea State Park. The MU is surrounded by Lake Sakakawea on three sides and adjoins the Sakakawea Girl Scout Camp on the southern border. The MU is accessed from Pick City, ND by graveled roads going 2 miles west, 2 miles north, and then 2 miles east, through the Girl Scout Camp. The MU contains approximately 48.93 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the MU consists of rolling uplands composed of Mandan silt loams (1 to 6 percent slopes). The riparian areas adjacent to the lake shoreline are steep and composed of Cabba loam soils (15 to 35 slopes). All of the soils in this MU are in the Cabba-Williams-Temvik group, which consists mostly of undulating to steep, shallow, well drained soil formed from weathered bedrock and glacial till.

Vegetation. The upland portions of the MU consist of native and introduced annual grasses, biennial and perennial weeds, and native forbs. There are several species of native wildflowers located in the MU. The riparian areas of the MU consist of scattered patches of native coniferous and deciduous trees and shrubs. The northern peninsula point consists of introduced and native coniferous tree plantings. The lake shoreline is dominated by Kochia, Canada thistle, and Russian thistle. The smaller islands are bare of vegetation, except for some annual weeds and grasses. The larger islands have the same diversity of plants as the peninsula point.

Fish and Wildlife. The peninsula portion of the MU is inhabited by upland game species including pheasant, grouse, partridge, rabbits, and squirrels. White-tailed deer and mule deer are year-round residents of the peninsula point, as well as many songbirds and rodents. An occasional furbearer or avian predator will be found hunting in the area. The islands are mainly used by nesting waterfowl and shorebirds as brood-raising areas. The small island northwest of Prairie Dog Island is a major nesting area for common terns. Some of the shoreline of the larger islands is suitable habitat for endangered species such as interior least tern and piping plover. A great blue heron was observed nesting on the large island just east of the peninsula in the early 1990s. Elk were introduced onto the peninsula point in the mid 1980s, but then escaped. In 1989, the elk were captured by the North Dakota Game and Fish Department and transferred to the zoo in Wahpeton, ND.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. The majority of recreational use that occurs in the MU consists of upland and big game hunting. Recreational activities on the islands include shoreline fishing, camping, picnicking, sightseeing and exploring. Prairie Dog Island is also used for sunbathing in the



summer. Some sailboat operators use the small bays of the peninsula and islands as boat mooring areas.

Other Important Past Management Activities. There is a fenced elk enclosure 8 feet high on the peninsula that has not been used since the elk escaped. A U.S. Coast Guard navigational light is located on the extreme northern part of the west island. Canadian goose nesting tubs are located in the MU.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain and improve the quality and diversity of vegetative resources to provide food and shelter for a variety of wildlife species;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Enhance and create habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Provide plantings for wildlife corridors between the upland areas and the shoreline;
- Promote adequate access that minimizes impacts on wildlife;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Plant trees and shrubs to increase the amount of woody vegetation for winter and nesting cover for upland and big game species;
- Plant warm and cool season grasses to increase dense nesting cover;
- Plant trees, food plots, native grasses, and/or marsh grasses to supplement the existing food sources for upland and big game species and/or waterfowl;
- Plant shoreline vegetation if needed to control erosion;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Establish additional wetland habitat;
- Construct water collection ponds where feasible to increase wetland habitat in the area;

- Develop additional woody draw habitat;
- Provide appropriate protection for any cultural resources;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Provide access and facilities to promote non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Provide for access to the shoreline consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Implement an aggressive noxious weed control program to include chemical, biological, and/or mechanical control methods;
- Preserve and enhance native grass plantings;
- Improve vegetative cover to enhance a variety of wildlife habitats;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

**7.157. LAKESHORE NEAR PICK CITY #2 COTTAGE SITE      MANAGEMENT UNIT (MU): 174**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Pick City #2 Cottage Site is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the SE 1/4 of Section 22, T147N, R85W, in Mercer County, North Dakota (ND). This MU is located 6 miles northwest of Pick City, ND. The Sakakawea Girl Scout Camp is located just to the northeast of the area. The MU contains approximately 48.65 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The area is accessed by 3 miles of paved and graveled county road from ND Highway 200.

Topography and Soils. The topography ranges from flat areas to steep hillsides and draws. The most dominant soil type in the area is Cabba loam (15 to 35 percent slopes), Mandan silt loam (1 to 3 percent slopes), Temvik-Williams silt loam (3 to 6 percent slopes), and Zahl loam (15 to 35 percent slopes).

Vegetation. Vegetation in the area includes crested wheatgrass, smooth brome grass, needle-and-thread grass, green needlegrass, prairie junegrass, cattails, buckbrush, Canada thistle, prairie coneflower, cudweed sagewort, many flowered aster, patches of creeping juniper and buffaloberry, prairie rose, green ash, American elm, and chokecherry. Noxious weeds in this MU include leafy spurge.

Fish and Wildlife. White-tailed deer are known to frequent the area. Game species such as pheasants, grouse, partridges, and rabbits are known to frequent the area. Songbirds are also present in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Pick City #2 Cottage Site, with occasional shoreline fishing and water skiing. There is minimal off-road

vehicle use in this area. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Adjacent cabin owners are allowed to mow Corps project property in this MU without delineating the boundary. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

## **7.158. PICK CITY #2 GRASSLAND WILDLIFE AREA**

**MANAGEMENT UNIT (MU): 175**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Pick City #2 Grassland Wildlife Area (WA) is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Emmet SE and Garrison Dam North USGS topographic maps, in Sections 22 and 27, T147N, R85W, in Mercer County, North Dakota (ND). The WA is bordered on the north by the Pick City #2 Cottage Site, and on the south and west by privately owned land. The east side of the WA is bordered by the West Acres Trailer Park. The WA is accessed by road from Pick City, ND by traveling 2 miles west, 2 miles north, and then 0.5 mile east. There are two access roads leading to the WA; one is by a section line road easement, and the other is from the driveway to the West Acres Trailer Park. The WA contains approximately 158.65 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in the Pick City #2 Grassland WA consists of rolling uplands and steep valleys and draws. The uplands portion of the WA contains soil types of Temvik-Williams and Williams-Zahl silt loams (1 to 15 percent slopes). The riparian valleys and draws are composed of Cabba loam soils (15 to 35 percent slopes). All of the soils in this WA are from the Cabba-Williams-Temvik group, which are undulating to steep, shallow, well drained soils formed from weathered bedrock and glacial till.

Vegetation. The upland portions of the WA consist of native and introduced annual grasses, biennial and perennial weeds, and native forbs and wildflowers. There are two deciduous and coniferous tree plantings within the upland portion of the WA. The riparian valleys and draws consist of native deciduous and coniferous trees and shrubs. Cattails and other wetland plants are found in a stock dam in the WA that was constructed by a local landowner in the 1920's. Much of the lake shore is covered with Kochia, Canada thistle, and Russian thistle. Six goose nesting tubs and one wood duck nesting box have been placed in the WA.

Fish and Wildlife. The WA is inhabited by upland game including pheasant, grouse, partridge, rabbit, and squirrels. White-tailed deer, mule deer, wild turkey, and an occasional antelope are found throughout the WA. Songbirds, raptors, rodents, and furbearers also use the WA. The wetland and shoreline areas contain nesting geese, ducks, and shorebirds. Great blue herons and other fish-eating birds also prey in the wetland area.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Recreational activities in the WA are minimal due to limited access to the WA. Recreational activities include shoreline fishing, primitive camping, and hunting of upland game, big game and waterfowl. Off-road vehicle (ORV) use in the WA has been restricted by some boundary fencing, but some ORV use is still occurring.

Other Important Past Management Activities. The majority of the WA was formerly grazed lands, but there are no current leases on this MU. The stock dam has been rebuilt twice since it was first constructed and was also repaired in 1993.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that

may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;
- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Actively monitor any grazing and agricultural use to improve the habitat for wildlife;
- Improve vegetative cover to enhance its value for wildlife and increase wildlife diversity;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **7.159. LAKESHORE NEAR WEST ACRES TRAILER PARK      MANAGEMENT UNIT (MU): 176**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore near West Acres Trailer Park is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the NE 1/4 of Section 27, T147N, R85W, in Mercer County, North Dakota (ND). This MU is located 5 miles northwest of Pick City, ND. The Sakakawea Bay Subdivision is located just to the northeast. The MU contains approximately 11.76 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The area is accessed by 2.5 miles of paved and graveled county road from ND Highway 200, but the last 0.5 mile is private.

Topography and Soils. The topography ranges from flat areas to steep hillsides and draws. The dominant soil type in the area is Zahl loam (15 to 35 percent slopes).

Vegetation. Vegetation in the area includes crested wheatgrass, smooth brome grass, needle-and-thread grass, green needlegrass, prairie junegrass, cattails, buckbrush, Canada thistle, cudweed, sagewort, patches of creeping juniper and buffaloberry, prairie rose, green ash, American elm, and chokecherry.

Fish and Wildlife. Game species such as pheasants, grouse, partridges, and rabbits are known to frequent the area. Songbirds are also present in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near West Acres Trailer Park, with occasional shoreline fishing and water skiing. There is minimal off-road vehicle use in this area. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;

- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.160. LAKESHORE NEAR SAKAKAWEA BAY SUBDIVISION**

**MGT. UNIT (MU): 177**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Sakakawea Bay Subdivision, formerly known as Pick City #1 Cottage Site, is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the SE 1/4 of Section 22, the SW 1/4 of Section 23, the NW 1/4 of Section 26, and the NE 1/4 of Section 27, T147N, R85W, in Mercer County, North Dakota (ND). This MU is located 5 miles northwest of Pick City, ND. The Happy Acres Trailer Park is located just south of the MU and the West Acres Trailer Park is located just west of the MU. The MU contains approximately 82.18 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The area is accessed by 2 miles of paved county road from ND Highway 200.

Topography and Soils. The topography ranges from flat areas to steep hillsides and draws. The most dominant soil types in the area are Cabba loam (15 to 35 percent slopes), Temvik-Williams silt loam (3 to 6 percent slopes), Grassna silt loam (1 to 3 percent slopes), Mandan silt loam (1 to 3 percent slopes), and Wilton silt loam (1 to 3 percent slopes).

Vegetation. Vegetation in the area includes crested wheatgrass, smooth brome grass, needle-and-thread grass, green needlegrass, prairie junegrass, cattails, buckbrush, Canada thistle, prairie coneflower, cudweed sagewort, many-flowered aster, patches of creeping juniper and

buffaloberry, prairie rose, green ash, American elm, cottonwood, and chokecherry. A portion of this MU has been planted to a shelterbelt of deciduous trees and shrubs.

Fish and Wildlife. White-tailed deer are known to frequent the area. Game species such as pheasants, grouse, partridges, and rabbits are known to frequent the area. Songbirds are also present in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore near Sakakawea Bay Subdivision, with occasional shoreline fishing, jet skiing, and water skiing. The public can access the shoreline by several Corps-owned freeways (vacant parcels of land between lots). There is minimal off-road vehicle use in this area. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. The Corps has sold all cabin sites, with the exception of two which are still being leased. Back in the early 1960s, several cottage owners placed riprap along the shoreline for bank stabilization. Placement of this riprap has been grandfathered. Approximately 60 acres of this MU has been hayed annually to reduce fire hazards to adjacent cottage sites.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Promote soil conservation, water quality, and public safety by facilitating control of shoreline erosion where problems exist;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.



Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Facilitate control of shoreline erosion where problems exist;
- Control noxious weeds.

#### **7.161. LAKESHORE NEAR HAPPY ACRES TRAILER PARK**

**MGT. UNIT (MU): 178**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Happy Acres Trailer Park is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the SW 1/4 of Section 26, T147N, R85W, in Mercer County, North Dakota (ND). This MU is located 4 miles northwest of Pick City, ND. Bayview Heights Subdivision is just north of the MU, and the Oliver County Sportsman Club is just south of the MU. The MU contains approximately 22.43 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The area is accessed by 1.5 miles of paved county road from ND Highway 200.

Topography and Soils. The topography ranges from flat areas to steep hillsides and draws. The dominant soil type in the area is Cabba loam (15 to 35 percent slopes).

Vegetation. Vegetation in the area includes crested wheatgrass, smooth brome grass, needle-and-thread grass, green needlegrass, prairie junegrass, cattails, buckbrush, canada thistle, cudweed, sagewort, patches of creeping juniper and buffaloberry, prairie rose, green ash, American elm, and chokecherry.

Fish and Wildlife. Game species such as pheasants, grouse, partridges, and rabbits are known to frequent the area. Songbirds are also present in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Happy Acres Trailer Park, with occasional shoreline fishing and water skiing. There is minimal off-road vehicle use in this area. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.162. OLIVER COUNTY SPORTSMEN'S CLUB LEASE AREA**

**MGT. UNIT (MU): 179**

Land Classification. Recreation

Managing Agency. Oliver County Sportsmen's Club

Location. The Oliver County Sportsmen's Club Lease Area is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the SW 1/4 of Section 26, SE 1/4 of Section 27, NE 1/4 of Section 34, and NW 1/4 of Section 35, of T147N, R85W in Mercer County, North Dakota (ND). The MU is located about four miles west of Pick

City, ND, just south of the Happy Acres Subdivision, and across the bay to the west of Voyageur Cove. The MU contains approximately 43.92 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed from ND Highway 200 by a short gravel road.

Topography and Soils. The topography in the area consists of relatively level prairie cut by numerous wooded and brushy intermittent drainages. Dominant soil types are Cabba loam, Ringling-Cabba complex, Temvik-Williams silt loams, and straw soils.

Vegetation. Vegetation consists of native prairie grass on the slopes and lower elevations and small brushy plants in the draws. Vegetation on the hills is primarily crested wheatgrass.

Fish and Wildlife. This MU is used by white-tailed deer, coyote, red fox, mink, raccoon, sharp-tailed grouse, ring-necked pheasant, and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in the area.

Visitation. The U.S. Army Corps of Engineers does not record visitation for this MU.

Recreation. This area is managed for primitive camping and day use. Recreational activities include camping, shore fishing, boating, and some big game and upland game hunting. Facilities include primitive campsites, pit toilets, a clubhouse, and a storage building.

Other Important Past Management Activities. Approximately 20 acres of the MU is hayed annually. A gate was installed on the main access road to deter vandalism and off-road vehicle use. The gate is kept locked except when club members are using the area. A pedestrian access gate was installed so that the general public can use the area. There was illegal livestock grazing prior to construction of a boundary fence in 1995.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Remove or replace pit toilets;
- Build a new storage building;

- Provide appropriate protection for any cultural resources;
- Plant trees and shrubs for shade and screening between the camping and day use areas;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds.

### **7.163. VOYAGEUR COVE**

**MANAGEMENT UNIT (MU): 180**

Land Classification. Recreation

Managing Agency. Voyageur Cove Center for Spiritual Direction

Location. The Voyageur Cove area is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in Sections 26, 34, and 35, T147N, R85W, in Mercer County, North Dakota (ND). The MU is located approximately two miles west of Pick City, ND, just southwest of Sakakawea State Park West and across the bay from the Oliver County Sportsman's Club. The MU contains approximately 77.45 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). It is accessed from ND Highway 200 by a short gravel road.

Topography and Soils. The topography in the MU consists of relatively level prairie cut by numerous wooded and brushy intermittent drainages. Dominant soil types are Cabba loam (15 to 35 percent slopes) and Ringling-Cabba complex (9 to 35 percent slopes).

Vegetation. Vegetation consists of native prairie grass on the slopes and lower elevations and small brushy plants in the draws. There are also patches of creeping juniper and buffaloberry, prairie rose, green ash, American elm, cottonwood, and chokecherry. Vegetation on the hills is primarily crested wheatgrass.

Fish and Wildlife. This area is used by white-tailed deer, coyote, red fox, mink, raccoon, sharp-tailed grouse, ring-necked pheasant, and gray partridge. Various waterfowl, shorebirds, raptors, and songbirds can be found in the area.

Visitation. The U.S. Army Corps of Engineers does not record visitation for this MU.

Recreation. This recreation area provides a setting that enhances spiritual direction and growth through retreats, workshops, and a variety of other programs. The area has primitive camping sites, a lodge, a shed, a boathouse, a garage building, and a swimming beach. Hunting is not allowed. Recreational activities that occur in this MU include group camping, swimming, hiking, and shore fishing. Public access to the shoreline is guaranteed.

Other Important Past Management Activities. This MU was originally leased by Young Life, who sold it to Voyageur Cove Retreat Ministries, who in turn sold it to Camp of the Cross Ministries, who sold it to Church of God of Prophecy in early 1994. In 2006, Church of God of Prophecy transferred the lease to Voyageur Cove Center for Spiritual Direction. Off-road vehicle problems previously existed in this area but were eliminated through extensive fencing.

Cultural Resources. Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Recognize the significance of both water-oriented and land-based activities;
- Improve existing access and circulation roads and parking areas;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Add landscape ties and sand to the volleyball area;
- Add a horseshoe pit;
- Remove any dead trees and replace them with new trees;
- Upgrade the entrance road to the building by gravel surfacing;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for shade and wildlife food supply and habitat.

#### **7.164. LAKE SAKAKAWEA STATE PARK**

**MANAGEMENT UNIT (MU): 181**

Land Classification. Recreation

Managing Agency. North Dakota Parks and Recreation Department (NDPRD)

Location. Lake Sakakawea State Park (SP) is shown on Sheets 1 and 4 (of 22) in Appendix A. The SP is located in Mercer County, North Dakota (ND). It is found on the Garrison Dam North USGS topographic map and includes all or portions of Sections 23, 24, 25, 26, and 36, T147N, R85W; and portions of Sections 30 and 31, T147N, R84W. The SP is approximately ½ mile north of Pick City, ND and 3 miles west of Riverdale, ND and is accessed by paved road. The SP has been expanded by the addition of three areas that were previously separate MU's, identified as follows. Lake Sakakawea SP West was previously known as Camp Dominic Savio; this area contained 109 acres of project lands and bounded the SP on the west. The 33-acre Intake Structure Picnic Area was located near Garrison Dam. The 30-acre Sakakawea Grasslands was located just east of Sakakawea Estates Subdivision. The expanded SP contains approximately 801.37 acres of project lands calculated in ArcView GIS without regard to actual relief, using a

lake elevation of approximately 1838 feet above mean sea level (msl); these are included in the 1,453.0 “blocked out” acres of land and water cited in the lease.

Topography and Soils. The topography in the area consists of relatively level to rolling prairie cut by relatively shallow drainages that create indentations in the shoreline of the reservoir. Soils are generally shallow and well drained, on undulating to steep slopes, and formed from weathered bedrock and glacial till. Dominant soil types are Mandan silt loam (1 to 3 percent slopes), Wilton silt loam (1 to 3 percent slopes), Temvik-Williams silt loam (3 to 6 percent slopes), Temvik-Williams silt loam (6 to 9 percent slopes), Regent-Rhodes Complex (6 to 9 percent slopes), Zahl-William loam (9 to 15 percent slopes), and Cabba loam (15 to 35 percent slopes).

Vegetation. Vegetation consists of native prairie grass on the slopes and lower elevations. Brush, cottonwood, green ash, and elm dominate the woody draws, and creeping juniper and buckbrush are also found. A large percentage of the level areas have been cultivated in the past and in these areas, introduced grasses such as crested wheatgrass and smooth brome comprise the predominant vegetation. There are several mature shelterbelt plantings in this MU. Noxious weeds include Canada thistle and leafy spurge.

Fish and Wildlife. Mammalian wildlife using the SP includes white-tailed deer, coyote, red fox, mink, raccoon, skunk, mink, badger, jackrabbit, ground squirrels, and mice. Upland game birds include sharp-tailed grouse, ring-necked pheasant, and gray partridge. Various waterfowl, shorebirds, raptors and songbirds can be found in the SP, depending upon the season. At the Lake Sakakawea Grasslands, geese and other waterfowl nest and raise broods, and some shorebirds can be found nesting along the lakeshore edges.

Visitation. The number of visits recorded by the U.S. Army Corps of Engineers (Corps) at this SP and the Intake Structure Picnic Area for fiscal years 1995 through 2006 are found in the visitation section of Chapter 2. A fiscal year extends from October 1 through September 30 of the next calendar year.

The NDPRD records visitation by calendar year, not fiscal year, and calculates the number of visitors by a different method than the Corps uses. The visitors recorded by NDPRD at Lake Sakakawea SP (not including the Intake Structure Picnic Area) during calendar years 1995 through 2006 are presented in the following table. Visitors in 2002 were actually higher than the number shown due to malfunctioning and replacement of a traffic counter. The number of campers, which are included in the total number of visitors, is based on an NDPRD estimate of 3.3 persons per occupied campsite. Over the 1995-2006 time period, campers accounted for about 14 percent of total SP visitation. However, camping at the SP appeared to be relatively resistant to low lake levels and comprised nearly 23 percent of total SP visitation during the low-water years of 2004-2006. In 2005, the two rental cabins were occupied for a total of 123 nights and accommodated a total of 459 persons, 10 percent higher than in 2004, even though total visitors declined by 17.5 percent from 2004 to 2005. Although cabin rentals decreased to 93 nights and 359 persons in 2006, this was more than offset by an increase of over 11 percent in campers using the campground. Cabin renters are included in the number of total visitors, but not in the number of campers, in the table below.

Year	Total Visitors	Campers	Year	Total Visitors	Campers
1995	225,817	28,644	2001	297,518	32,868
1996	214,061	29,403	2002	167,006	33,300
1997	243,333	26,014	2003	202,380	31,743
1998	263,475	31,614	2004	146,809	28,202
1999	275,749	33,010	2005	124,895	28,241
2000	310,198	32,898	2006	115,573	31,393

**Recreation.** Lake Sakakawea SP receives heavy recreational use, especially during the summer months. Popular day-use activities include boating, fishing, sailing, hiking, picnicking, horseshoes, volleyball, baseball, swimming, and sunbathing. NDPRD records indicate that between 1995 and 2005, about 14 percent of visitors to the SP engaged in camping. Camping facilities include a dump station; 12 group camping areas (each with a fire ring, 3 picnic tables, and a 20 or 30-amp electrical outlet); 2 rental cabins; and 190 campsites, each with a picnic table and fire ring, electrical hookups (150 20-amp, 150 30-amp, and 100 50-amp), and potable water (including 100 individual hookups). Recreational facilities for day users as well as campers include an entrance station, an amphitheater, 3 group picnic shelters with electricity and a total of 55 picnic tables, 2 group picnic areas with a total of 8 picnic tables and 8 grills, 2 playgrounds, 2 volleyball courts, a baseball field, horseshoe pits, a swimming beach, 2 boat ramps, a fish cleaning station, a marina, dry storage for 80 boats, an office building, a concession building, a snack bar, 2 storage buildings, a maintenance building, a utility building, 10 restrooms with a total of 12 showers, and 12 parking lots. Boats are often moored at Lake Sakakawea SP West and Lake Sakakawea Grasslands, and the bay at Lake Sakakawea Grasslands is a favorite area for jet skiing and water skiing. The western terminus of the North Country National Scenic Trail (the eastern terminus of which is in New York City) is located at the SP; about 1 mile of this mowed hiking and walking trail was constructed in the SP with National Park Service cost-shared funds, and another segment of this National trail begins at the Audubon National Wildlife Refuge. A mowed walking trail runs along the shoreline. A single-track mountain biking trail approximately 0.5 miles long serves as a demonstration for construction techniques that make the trail sustainable by adapting to various topographic and environmental characteristics. Information signs about these techniques were designed by members of the International Mountain Biking Association, and sign construction was funded using Lewis and Clark Legacy Trail cost-shared funds.

**Other Important Past Management Activities.** The expanded Lake Sakakawea SP includes three new areas that were previously separate management units. Lake Sakakawea Grasslands previously had a land classification of Multiple Resource Management: Vegetative Management and was added to the SP to provide open space for more diverse low density recreation activities. Lake Sakakawea SP West was previously managed by a quasi-public entity as a camp, and the Intake Structure Picnic Area was previously managed by the Corps; both had land classifications of Recreation.

**Cultural Resources.** Prior to any future development at or near this recreation area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this recreation area include the following, not in priority order:

- Improve the quality, quantity, safety, and diversity of recreational opportunities and facilities;
- Provide recreation facilities for family and group day use and camping activities;
- Provide separation of day use and camping areas;
- Recognize the significance of both water-oriented and land-based activities;
- Provide lake access for fishing, boating, and other water-oriented recreation;
- Promote prevention of the spread of aquatic nuisance species;
- Provide concessionaire marina facilities and services;
- Provide opportunities for the elderly and handicapped to participate in a variety of activities;
- Promote non-consumptive uses of resources such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Promote soil conservation and water quality by controlling shoreline erosion where problems exist;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Provide trees for shade and wildlife;
- Promote ecological integrity by controlling noxious weeds;
- Maintain and/or improve wildlife habitat for a variety of species.

Development Needs. Development needs for this recreation area include the following, not in priority order:

- Upgrade electrical and water facilities at the SP;
- Provide a potable water supply at Lake Sakakawea SP West;
- Expand recreational vehicle (RV) trailer dump stations at the SP;
- Renovate or replace obsolete recreation support buildings such as shelters, comfort stations, and vault toilets at the SP;
- Construct partial service and full service camper cabins at the SP, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Expand day use facilities at the SP as needed to meet increased public demand;
- Construct a multi-use non-motorized trail system in all four MU's that connect to adjacent Corps-managed and NDGFD-managed areas;
- Coordinate with other agencies regarding alignment of the North Country National Scenic Trail segment between the SP and the Audubon National Wildlife Refuge;
- Install a hard-surfaced trail at least 6 feet wide with nearby benches that meets Americans with Disabilities Act (ADA) standards;
- Install trail rest areas and interpretive kiosks in the Intake Structure Picnic Area;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Improve access for shoreline fishing and hiking in the Intake Structure Picnic Area;
- Construct shoreline fishing access points and piers that meet ADA standards;
- Stabilize the shoreline to control erosion and protect recreation facilities, especially at the marina basin and along the west and north banks;
- Expand beach mooring opportunities at Lake Sakakawea SP West;
- Provide development opportunities to concessionaires for water-related activities;
- Expand concession operations in the marina area, if supported by market and feasibility studies, the results of which are concurred with by the Corps;
- Provide augmented interpretation of the NDGFD's salmon ladder;



- Coordinate with other entities to provide educational signage for preventing the spread of aquatic nuisance species;
- Coordinate with other entities to provide facilities for hosing down boats and trailers to prevent the spread of aquatic nuisance species;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation and interpretation, photography, bird watching, and sightseeing;
- Control noxious weeds;
- Plant trees, shrubs, and native grasses for aesthetics, shade, and wildlife food supply and habitat.

#### **7.165. LAKESHORE NEAR SAKAKAWEA ESTATES SUBDIVISION**

**MGT. UNIT (MU): 182**

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The lakeshore area near Sakakawea Estates Subdivision is shown on Sheets 1 and 4 (of 22) in Appendix A. It is located on the Garrison Dam North USGS topographic map, in the SE 1/4 of Section 26, T147N, R85W, in Mercer County, North Dakota (ND). This MU is located 2 miles northwest of Pick City, ND. Lake Sakakawea State Park is located to the northwest and the east. The MU contains approximately 12.63 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl). The area is accessed by 1/2 mile of paved county road from ND Highway 200.

Topography and Soils. The topography in this MU ranges from flat areas to steep hillsides and draws. The dominant soil types in the area are Cabba loam (15 to 35 percent slopes) and Regent-Rhoades complex (6 to 9 percent slopes).

Vegetation. Vegetation in the area includes crested wheatgrass, smooth brome grass, needle-and-thread grass, green needlegrass, prairie junegrass, cudweed sagewort, patches of creeping juniper and buffaloberry, prairie rose, green ash, American elm, cottonwood and chokecherry.

Fish and Wildlife. Game species such as pheasants, grouse, partridges, and rabbits are known to frequent the area. Songbirds are also present in the area.

Visitation. The Corps does not record visitation for this area.

Recreation. Boating is the major recreational activity at the lakeshore area near Sakakawea Estates Subdivision, with occasional shoreline fishing and water skiing. There is minimal off-road vehicle use in this area. Shoreline use is authorized for this area in the Shoreline Management Plan; permits will be evaluated for impacts to the natural resources as well as availability of shoreline to adequately support dock activity.

Other Important Past Management Activities. Any encroachments that existed prior to 2007 have been resolved.

Cultural Resources. Prior to any future development at or near this low-density recreation area, an evaluation must be made to determine if the development would affect any historic properties

that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this low-density recreation area include the following, not in priority order:

- Provide recreation opportunities for day use;
- Provide opportunities for dispersed water-oriented recreation;
- Maintain adequate access and circulation roads and parking consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Provide for visitor safety;
- Provide resource-oriented development consistent with approved day use activities;
- Promote non-consumptive activities such as hiking, bicycling, wildlife observation, bird watching, photography, and sightseeing;
- Promote public awareness of regulations concerning off-road vehicle use through signage and enforcement;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Maintain and manage the existing vegetation to provide habitat for upland game birds, waterfowl, and other wildlife species;
- Protect any state or federally listed threatened and endangered species that may periodically use the area;
- Promote ecological integrity by controlling noxious weeds.

Development Needs. Development needs for this low-density recreation area include the following, not in priority order:

- Maintain or establish an identifiable boundary between adjacent developed areas and project lands;
- Provide appropriate protection for any cultural resources;
- Provide wildlife habitat improvements that also enhance activities such as hiking, wildlife observation, bird watching, photography, and sightseeing;
- Facilitate establishment of reasonable lake access in accordance with the Shoreline Access Policy and Shoreline Management Plan;
- Facilitate vegetative management practices that enhance bank stabilization;
- Control noxious weeds.

#### **7.166. WEST TAILRACE GRASSLAND**

**MANAGEMENT UNIT (MU): 183**

Land Classification. Multiple Resource Management: Vegetative Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The West Tailrace Grassland is shown on Sheet 1 (of 22) in Appendix A. It is located on the Garrison Dam South and the Garrison Dam North USGS topographic maps in the W ½ of Section 6 and the N ½ of the NW ¼ of Section 7, T146N, R84W; the SW¼ of the SW¼ of Section 31, T147N, R84W; and the S½ of the SE¼ of Section 36, T147N, R85W, all in Mercer County, North Dakota (ND). This MU is located southeast of Pick City, ND on the south side of ND State Highway 200, from which it is accessed by the West Tailrace access road. The MU

contains approximately 393.91 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. The topography in this MU ranges from flat, level areas, to steep hillsides, to almost vertical cliffs. The south and western parts of the MU contain a large valley and stream which enters the Missouri River below Garrison Dam. The soils in this MU are from the Cabba-Williams-Temvik association, which is composed of Ustorthents, Temvik-Williams loam, Cabba-Badland complex, Grail silty clay loam, Cabba loam, and Moreau silty clay.

Vegetation. Mixed prairie grasses can be found throughout the MU but are most prevalent in the upland areas. The draws and big valley in the center of the MU contain some stands of tall trees. The small pond in the big valley supports a wetland that contains stands of cattails, sedges, and rushes. Some spoil piles left over from the dam construction on the east side of the MU are very sparsely vegetated.

Fish and Wildlife. The MU is used by white-tailed deer, mule deer, red fox, mink, raccoon, cottontail rabbit, turkey, beaver, ring-necked pheasant, Hungarian partridge, and several species of rodents and songbirds on a year round basis. The wetland areas are used by waterfowl and shorebirds as nesting and brood raising sites. Bald eagles, golden eagles, and several species of hawks and owls have been observed in the MU. The wetland is inhabited by a variety of small minnows and an occasional carp.

Visitation. The Corps does not record visitation for this vegetative management area.

Recreation. The major recreational uses that occur in the MU are big game and upland game hunting, shore fishing, wildlife viewing, and sightseeing. Occasional recreation activities include trapping, photography, and hiking. The paved access road traversing the MU leads to the West Tailrace and is heavily used year round by visitors. There is an overlook parking area in the southern part of the MU. There have been some incidents of off-road vehicle (ORV) use in the MU, primarily in the southwest part.

Other Important Past Management Activities. The 1978 Master Plan designated this area for low-density recreation. A lone campsite just off of the West Tailrace access road was eliminated in 1991. The area that previously comprised the northern portion of the West Tailrace Grassland was designated for project operations in the 1978 Master Plan and is still being used for those purposes; therefore, it was removed from the West Tailrace Grassland and became part of the MU that includes the dam and the powerhouse.

Cultural Resources. Prior to any future development at or near this vegetative management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this vegetative management area include the following, not in priority order:

- Balance wild land values and public uses with planning, design, development, and management stewardship practices;
- Maintain and/or improve vegetative cover for habitat for a variety of wildlife species;
- Promote access that minimizes adverse impacts on vegetation and wildlife;

- Maintain water quality in concert with irrigation, water supply, recreation, and fish and wildlife use;
- Maintain high levels of water quality and soil conservation practices;
- Develop and manage project resources to support types and levels of recreation activities consistent with carrying capacities and preservation of aesthetic, cultural, and ecological values;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

Development Needs. Development needs for this vegetative management area include the following, not in priority order:

- Actively monitor grazing and agricultural use to improve the habitat for wildlife;
- Install signage and/or fencing to reduce vehicular damage to vegetation;
- Improve shoreline accessibility consistent with the Shoreline Access Policy and Shoreline Management Plan;
- Plant shoreline vegetation if needed to control erosion;
- Develop additional woody draw habitat;
- Monitor and maintain the vegetative resources to ensure their continued survival;
- Implement an aggressive noxious weed control program to include chemical, biological, and mechanical control methods;
- Preserve and protect important paleontological, ecological, and aesthetic resources;
- Provide appropriate protection for any cultural resources;
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species;
- Manage and develop lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

#### **7.167. LAKE SAKAKAWEA ISLANDS WILDLIFE AREA**

**MANAGEMENT UNIT (MU):184**

Land Classification. Multiple Resource Management: Wildlife Management General

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. The Lake Sakakawea Islands appear on most of the 22 sheets in Appendix A. They are located all over Lake Sakakawea, and all the islands except those in the Van Hook Arm are relatively close to shore. Mallard Island, the Missouri River islands upstream from U.S. Highway 86 southwest of Williston, and the islands in Lake Audubon are not included in this MU. The islands in this MU contain approximately 338.53 acres of project lands calculated in ArcView GIS without regard to actual relief, using a lake elevation of approximately 1838 feet above mean sea level (msl).

Topography and Soils. Topography and soils vary among the islands. The processes that form various soil types and the factors resulting in shoreline erosion vary geographically.

Vegetation. Vegetation varies from island to island. On the portions of the islands that are rarely inundated, vegetation may include native and non-native grasses, forbs, shrubs, and trees. During times of drought, when lake levels recede, previously inundated areas are exposed. These newly exposed areas may be unvegetated, but plants (including weeds) may begin to grow on these areas within a short time after exposure.

Fish and Wildlife. Wildlife on the islands varies with the vegetation. Islands with suitable substrate, especially during times of low lake levels, may be nesting areas for interior least terns and piping plovers. Avian species may include waterfowl, small game birds, and songbirds. During periods of rising water levels, vegetated areas that were previously exposed are inundated. Habitat for fish and other aquatic species may be improved temporarily following inundation by the availability of vegetative substrate for invertebrates and other microscopic organisms, cover for fish, and good spawning and nursery areas for some fish species.

Visitation. The Corps does not record visitation for this wildlife management area.

Recreation. Day use activities or hunting may occur on these islands.

Other Important Past Management Activities. The Van Hook Islands previously constituted a separate MU. The remaining islands previously were included in the MU that occupied the mainland closest to the island but were not actively managed by the Corps.

Cultural Resources. Prior to any future development at or near this wildlife management area, an evaluation must be made to determine if the development would affect any historic properties that may be eligible for the National Register or any Traditional Cultural Properties and the best way to avoid, minimize, or mitigate potential impacts.

Resource Objectives. Site-specific resource objectives for this wildlife management area include the following, not in priority order:

- Manage the wildlife and fishery resources to support propagation of the species;
- Manage the vegetation resources for wildlife habitat, conservation of resources, and aesthetics;
- Maintain a no net loss of native prairie;
- Maintain a no net loss of wetlands;
- Monitor and maintain habitat for threatened and endangered species and any candidate, sensitive, or otherwise designated species;
- Promote non-consumptive resource uses such as wildlife observation, bird watching, hiking, photography, and sightseeing;
- Maintain, conserve, and monitor aesthetic, ecological, historic, paleontological, and other scientific resources while meeting other project resource objectives;
- Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties in accordance with the Programmatic Agreement (PA);
- Preserve, monitor, and protect any cultural resources;
- Promote ecological integrity by controlling noxious weeds;
- Coordinate management activities with other land managing agencies/entities to more efficiently and effectively benefit wildlife.

Development Needs. Development needs for this wildlife management area include the following, not in priority order:

- Monitor and maintain the vegetative resources to ensure their continued survival and use by wildlife for food and cover;
- Maintain/manage wetlands for wetland species, any resident or migratory waterfowl and shorebirds, and threatened and endangered species;
- Control shoreline erosion in areas where it is adversely affecting wildlife habitat;
- Provide appropriate protection for any cultural resources;
- Provide opportunities for non-consumptive uses of wildlife such as wildlife observation, bird watching, hiking, photography, and nature study;
- Provide opportunities for hunting;
- Implement a noxious weed control program that includes chemical, biological, and/or mechanical control methods;
- Manage lands in cooperation and coordination with other management agencies and appropriate entities in the private sector.

## **8. CONCLUSIONS AND RECOMMENDATIONS**

### **8.1. CONCLUSIONS**

Lake Sakakawea began to be impounded when Garrison Dam was closed in 1953, and the total lake surface covers over 377,000 acres (nearly 600 square miles) when Lake Sakakawea has a surface elevation of 1838 feet above sea level (msl) and Lake Audubon has a surface elevation of 1850 feet msl.

Lake Sakakawea is 178 miles long, and its central portion lies within the external boundaries of the Fort Berthold Indian Reservation. Transportation between the northern and southern shores of Lake Sakakawea are limited to U.S. Highway 83, across the Snake Creek embankment that separates Lake Sakakawea from Lake Audubon, near Garrison, ND; the Four Bears Bridge at New Town, ND; and the U.S. Highway 85 bridge west of Williston, ND.

Project operations areas are essential to maintaining the functioning of the Garrison Dam/Lake Sakakawea project to accomplish its authorized purposes. The U.S. Army Corps of Engineers (Corps) manages the dam, powerhouse, spillway, and administration building at Riverdale and the resource office, levee, and operations area at Williston, ND. The Bureau of Reclamation manages the Snake Creek Pumping Station and Embankment and the McClusky Canal, which are involved in provision of water for irrigation, municipal, rural, and industrial purposes.

Approximately four-fifths of visitors to recreation areas at Lake Sakakawea live in the western half of North Dakota; this area includes Bismarck, the state capital. Approximately one-tenth of the visitors live in the eastern half of North Dakota, and approximately one-tenth live outside North Dakota. There are demonstrated needs for additional and upgraded recreation facilities of all types in all portions of the project area. Most of the 54 intensive-use recreation areas are managed by non-Corps entities under the terms of public park and recreation leases. Three State Parks on project lands are managed by the ND Parks and Recreation Department, and other recreation areas are leased by the Three Affiliated Tribes, local governmental agencies, and quasi-public (non-profit) organizations. The recreation areas offer great variety in location, types and levels of developed facilities for land-based and water-based recreation activities; the presence and type of concession facilities; and annual and seasonal visitor use.

To reduce environmental impacts, intensive-use and low-density recreation areas combined comprise less than 10 percent of Lake Sakakawea project land acres. The project includes 42 areas for low-density recreation activities. Some of these areas, managed by the Corps or other entities, are relatively secluded; have few recreational facilities; emphasize nature-oriented activities such as hiking, bird watching, and primitive camping; and experience relatively low visitation. Other low-density recreation areas, all managed by the Corps, lie between the lake shore and privately owned residential subdivisions adjacent to the project boundary. These areas are open to the general public, although most visitors live in the adjacent housing areas.

Wildlife management activities are important in all areas of the project, regardless of their land classification. Moreover, nearly 58 percent of project lands (including islands) are classified specifically for wildlife management in this Master Plan/EA. The U.S. Fish and Wildlife Service (USFWS) manages the Garrison Dam National Fish Hatchery and the Audubon National Wildlife Refuge (NWR). The NWR adjoins the Audubon Wildlife Management Area (WMA) managed by the ND Game and Fish Department (NDGFD) at Lake Audubon. The NDGFD also leases over 45,500 acres in 13 WMA's along Lake Sakakawea; the WMA's feature hunting and wildlife-oriented non-consumptive activities such as hiking and nature observation. In the future,

the NDGFD-leased acreage is expected to increase to the 51,000 acres provided for in the 1983 General Plan as the NDGFD decides to assume management of additional Corps-managed Wildlife Areas. Classifying all islands at the Lake Sakakawea project for wildlife management and implementation of provisions of the June 2006 MOU between the Corps and NDGFD (included as Appendix H of this Master Plan/EA) will aid threatened and endangered species in particular, and fish and wildlife in general, in the Missouri River and at the Lake Sakakawea project. The Corps, USFWS, Bureau of Indian Affairs, Three Affiliated Tribes, NDGFD, and non-governmental partners such as Pheasants Forever have coordinated to maximize the effectiveness of wildlife management efforts. These efforts include plantings, sharing research data, and collaborating to monitor and control noxious weeds and aquatic nuisance species. These efforts also include coordinating to minimize disturbance to wildlife and wildlife habitat from overgrazing and/or use of vehicles off-road in restricted areas; in some wildlife areas, these efforts may be hampered by lack of boundary signage or fencing.

Vegetative management activities are also very important in all areas of the project, regardless of their land classification. At the time this Master Plan/EA was prepared, 29 areas were classified specifically for vegetative management; this represented over 31 percent of project lands. Nine of these areas lie within the external boundaries of the Fort Berthold Indian Reservation. They are proposed to be managed by the Bureau of Indian Affairs (BIA) and represent the majority of the project's vegetative management lands. Most vegetative management areas have grazing leases, and hunting also occurs on many of these areas. Monitoring and regulating grazing activities to prevent overgrazing are important for maintaining the quality of the vegetation for wildlife habitat (and also for fish habitat, in areas usually covered by the lake but exposed during low pool elevations during drought conditions). The collaborative efforts cited in the previous paragraph as important for wildlife areas are also important for vegetative management areas.

The proposed conservation, management, and development activities, plans, and policies in this Master Plan are consistent with authorized project purposes and resource capabilities and accommodate Federal, Tribal, State, and local needs. They represent wise stewardship of resources and will result in increased opportunities for enjoyment of outdoor recreation activities as well as providing wildlife habitat; improving visual quality; and protecting unique and important ecological, cultural, and aesthetic resources.

Extensive coordination with Tribal, Federal, State, and local agencies and with non-governmental organizations, as well as extensive citizen involvement, was incorporated in all aspects of this Master Plan. Planning for the development, preservation, or enhancement of project resources will continue to be coordinated with Tribes, governmental agencies, non-governmental organizations, and members of the general public to ensure the efficient, effective, and timely implementation of the resource objectives.

The continued cooperation among Federal, Tribal, State, local, and non-governmental interests to preserve and improve the natural and man-made resources at the Garrison Dam/Lake Sakakawea project will provide improved outdoor recreation opportunities in North Dakota for future generations of both residents and non-residents.

The activities, plans, and policies proposed in this Master Plan/EA are consistent with the Corps' seven Environmental Operating Principles.



## **8.2. RECOMMENDATIONS**

It is recommended that this updated Master Plan/EA guidance be closely followed in managing the natural, cultural, and other man-made resources at the Garrison Dam/Lake Sakakawea project.

It is recommended that all procedures developed in accordance with the Programmatic Agreement be followed, including cultural resource protection and management activities and providing Tribes with site-specific plans for development that were proposed in concept form in the Master Plan/EA to afford opportunities for Tribal comments and consultation.

It is recommended that the Corps' current Operational Management Plan (OMP) for the Garrison Dam/Lake Sakakawea project be reviewed for consistency with this updated Master Plan/EA and that the OMP be revised as needed.

It is recommended that recommendations included in Chapter 3 be implemented, including development of contingency plans for major potential impacts of high or low pool levels and the communication of these plans to affected users and the general public.

It is recommended that members of the Garrison Dam/Lake Sakakawea Master Plan/EA Steering Committee continue to coordinate with the Corps after the finalization of the Master Plan/EA to support the development and management of Lake Sakakawea resources.

It is recommended that a Stakeholders' Meeting be held in December of each year after the Master Plan/EA is finalized. This meeting would be open to all stakeholders, including Steering Committee members; other representatives of interested Tribes, Federal and State agencies, local officials, lessees, and non-governmental organizations; and interested members of the general public. At this meeting Corps staff will provide an update on important management and development activities that occurred at the project during the previous 12 months. Corps staff and attendees will also identify issues and problems, prioritize them, and arrange how to coordinate to solve them. Subcommittees should be formed to implement these solutions and other needed tasks, such as developing criteria for various types of potential marina development.

It is recommended that additional boundary surveys be conducted where needed and the boundaries marked, and that signage and/or fencing be installed where appropriate, especially at wildlife management areas, if and when funds are available.

It is recommended that vehicle use in areas where it is prohibited continue to be monitored, and that problems be corrected by installation of signage and/or fencing as appropriate.

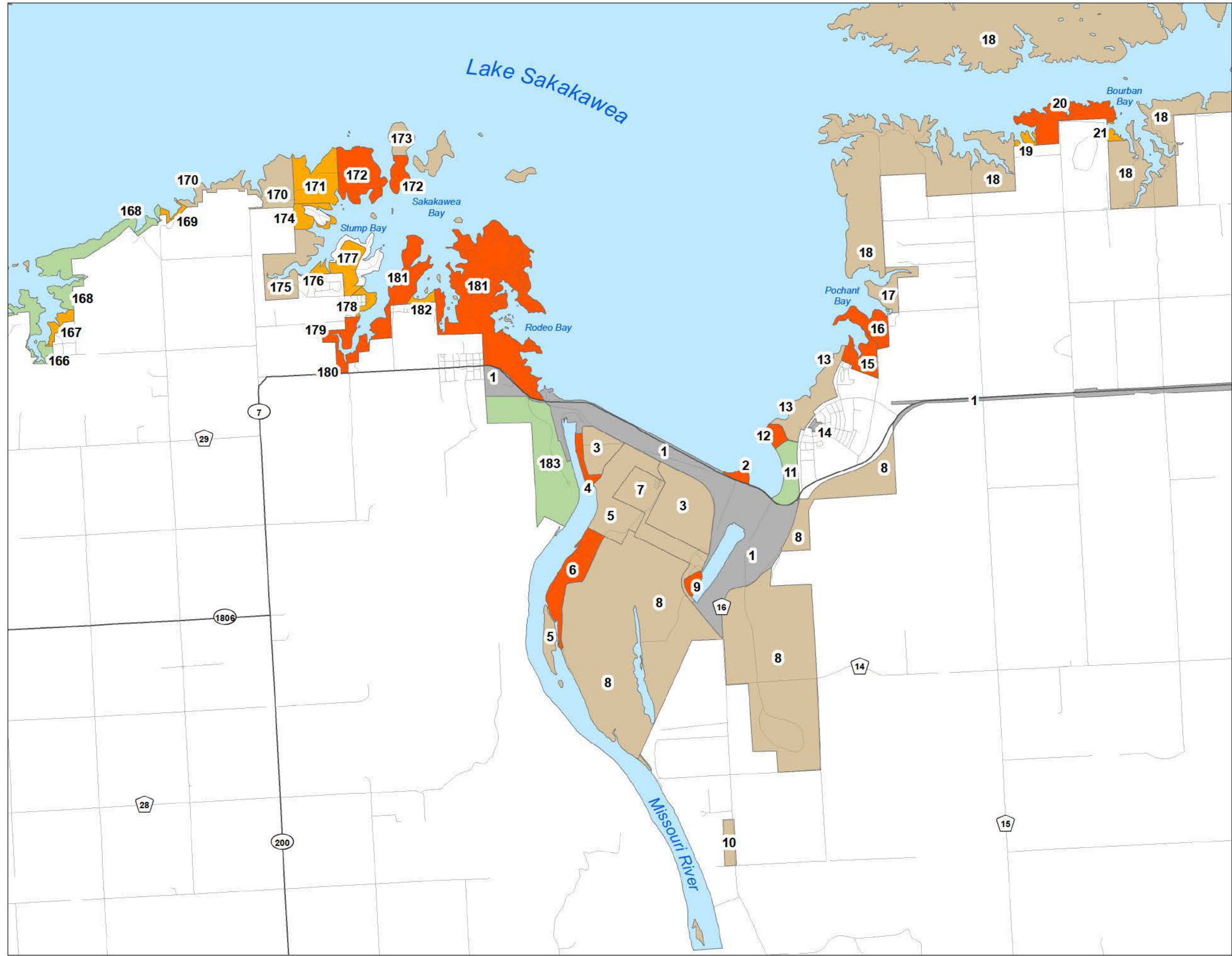
It is recommended that the Corps continue coordinating with NDGFD in monitoring aquatic nuisance species and that the Corps continue its involvement with the NDGFD's Aquatic Nuisance Species Advisory Committee.

If in the future the Corps decides it does not require all or part of the Spillway East portion of MU 001 for Project Operations purposes, it is recommended that consideration be given to reclassifying that area for Multiple Resource Management: Wildlife Management General, as this area was included in the 1983 General Plan.

Finally, it is recommended that this updated Master Plan/EA be approved as the U.S. Army Corps of Engineers' policy guidance for the Garrison Dam/Lake Sakakawea Project, Missouri River, North Dakota.

**APPENDIX A  
CURRENT LAND CLASSIFICATION PLATES**

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**Land Classification**

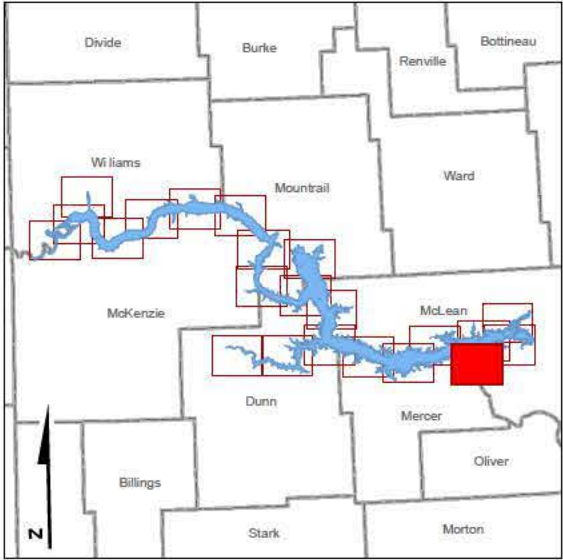
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# Master Plan

Garrison Project / Lake Sakakawea

Current Land Classification

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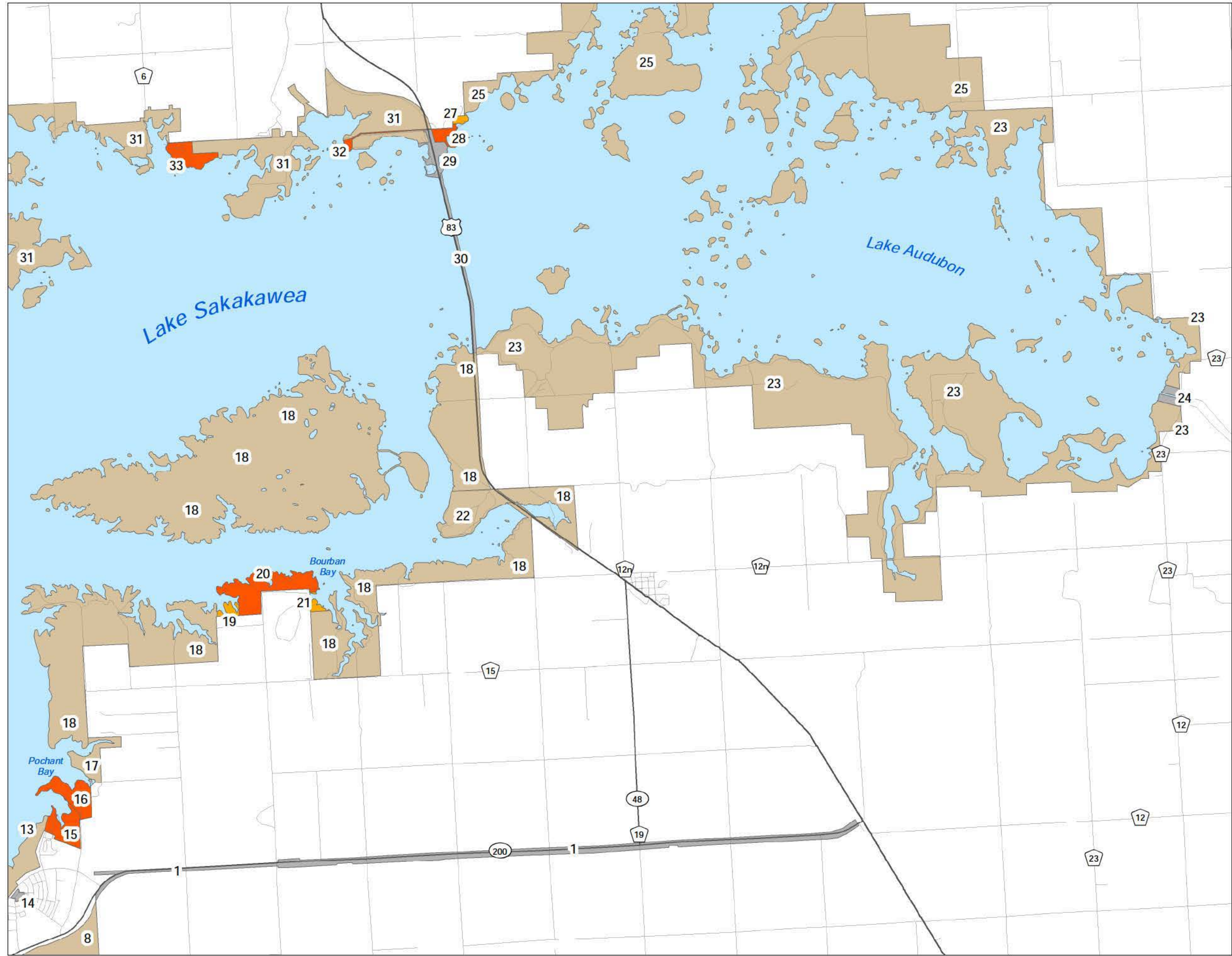
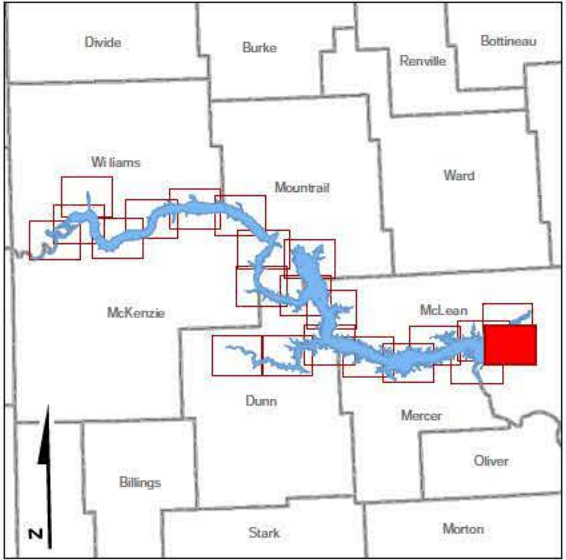
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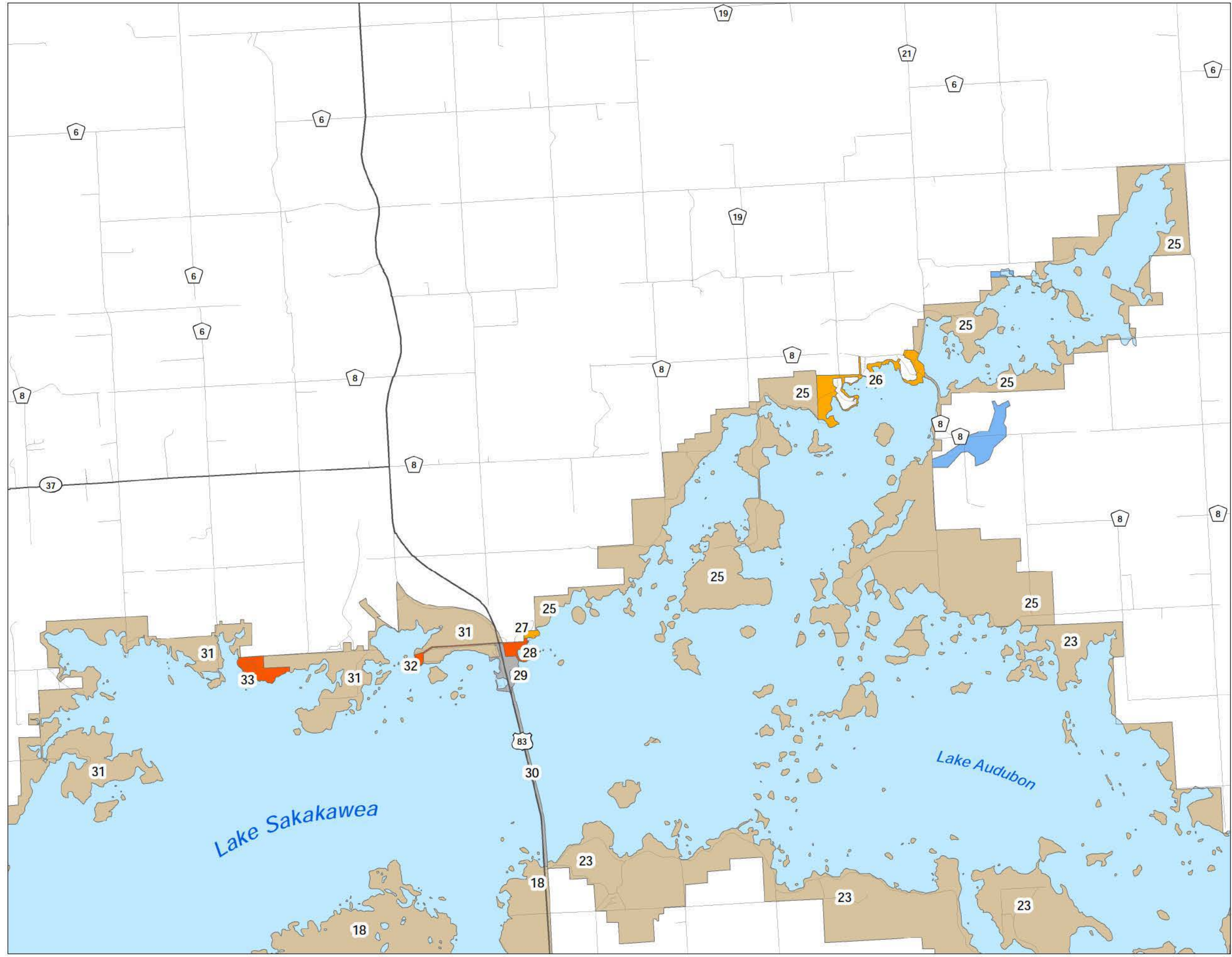
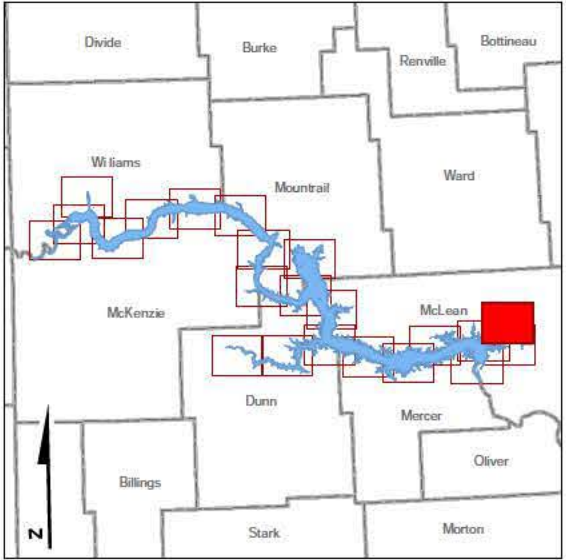
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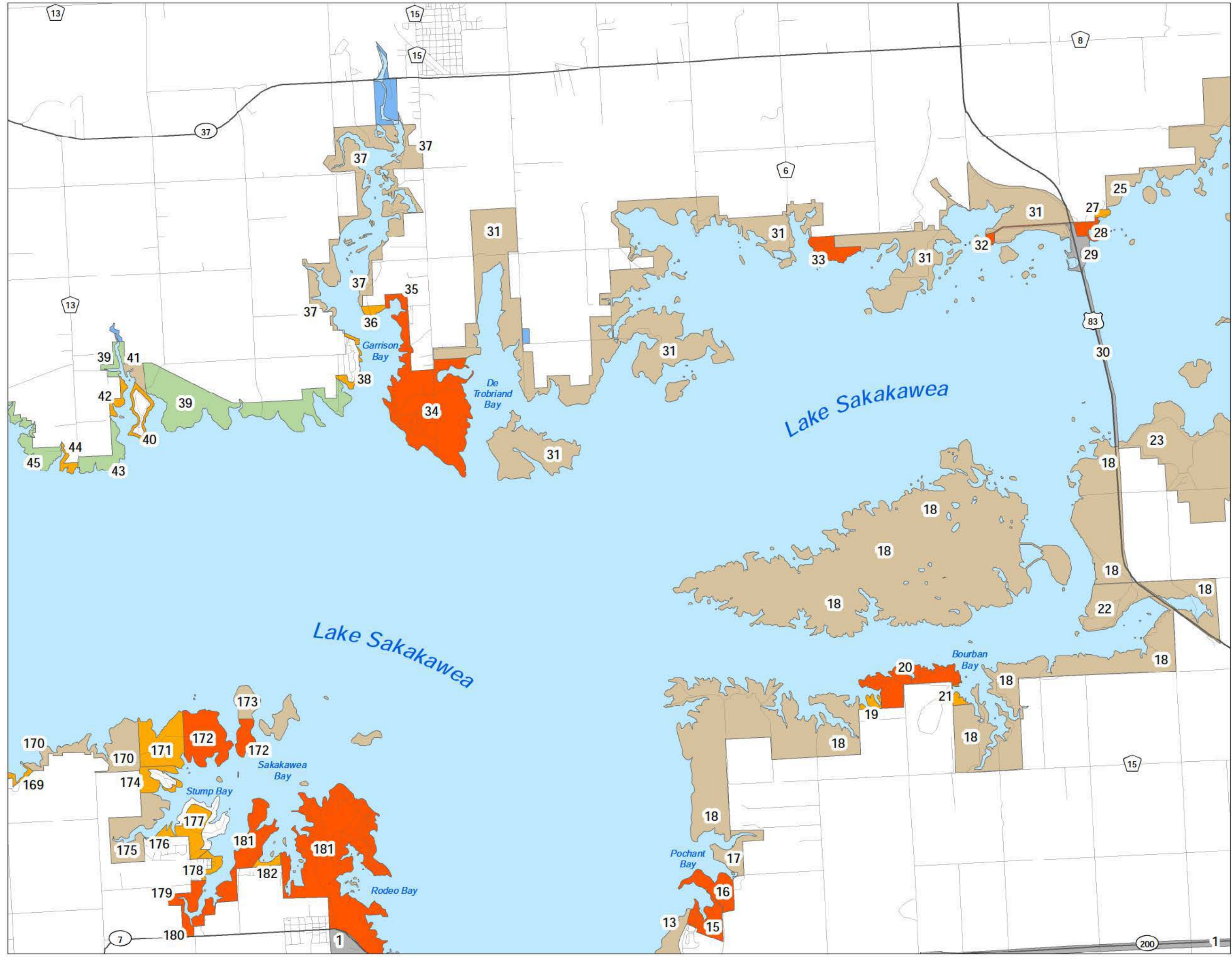
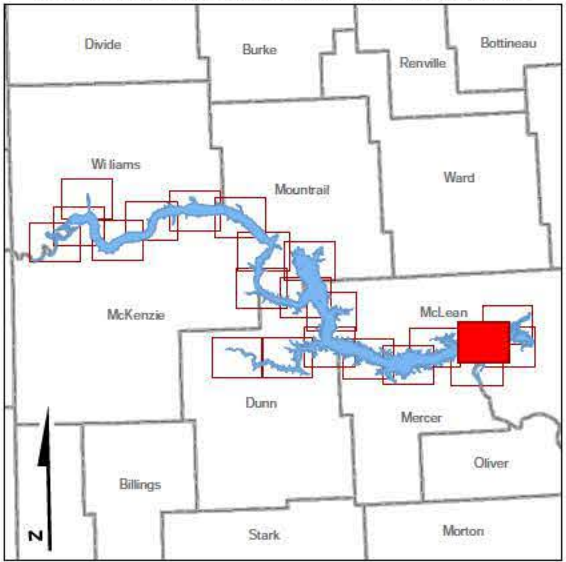
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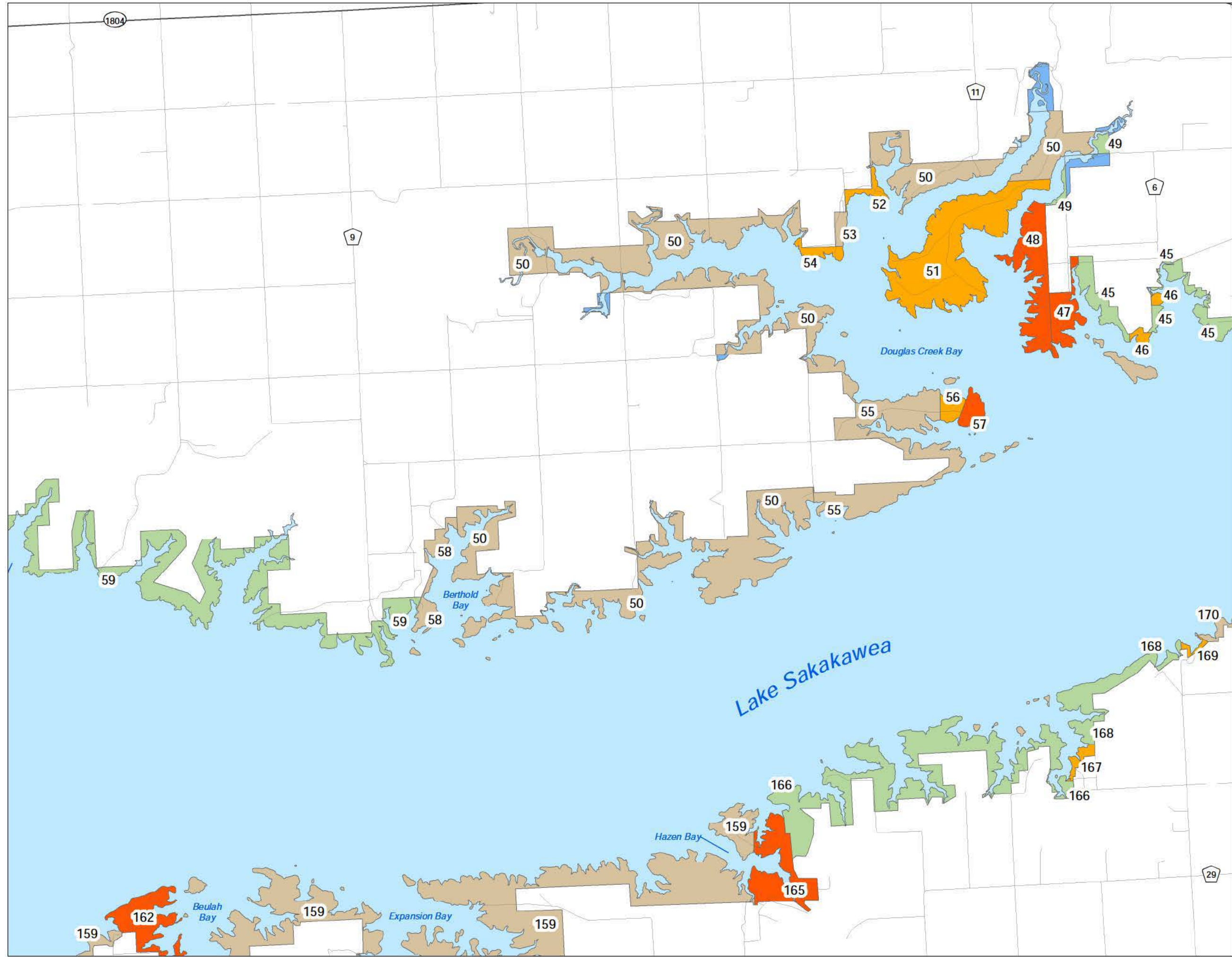


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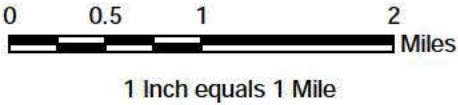
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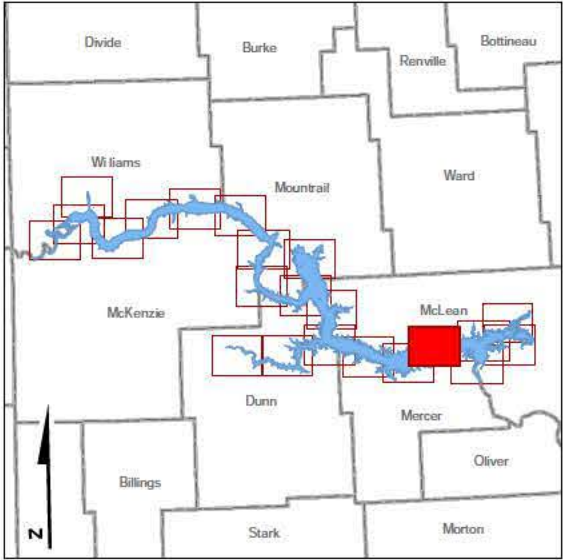
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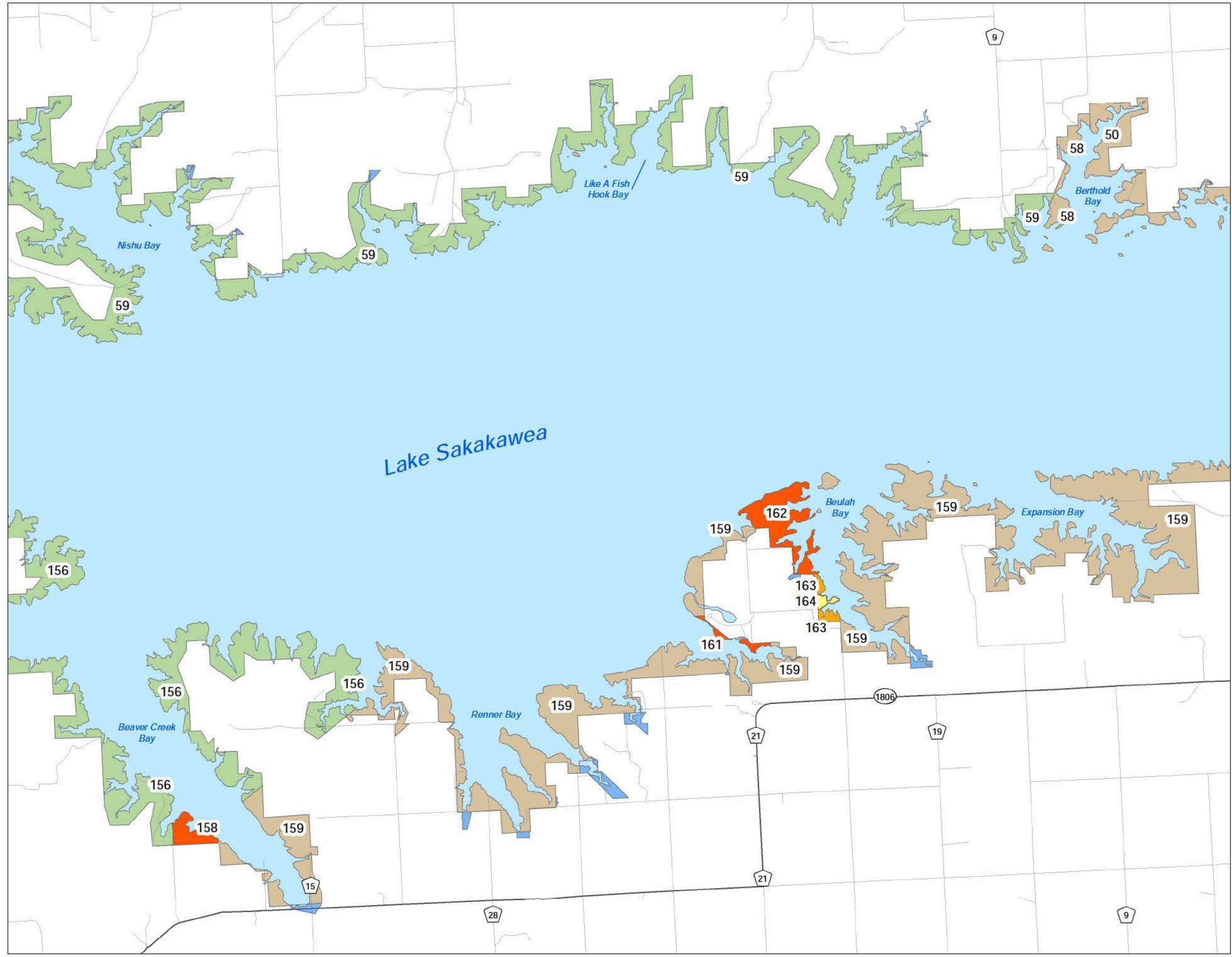
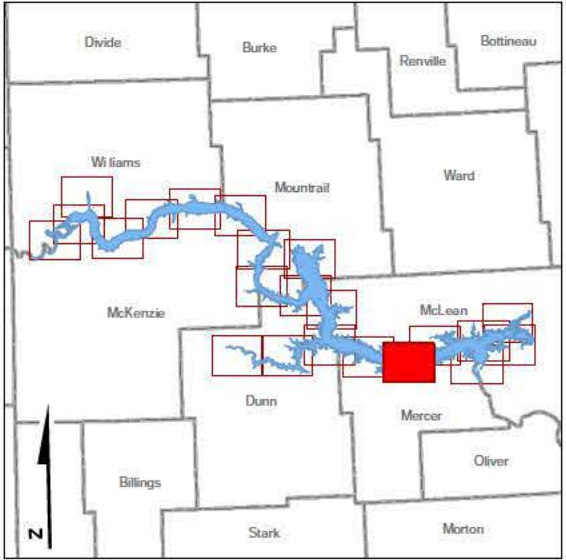
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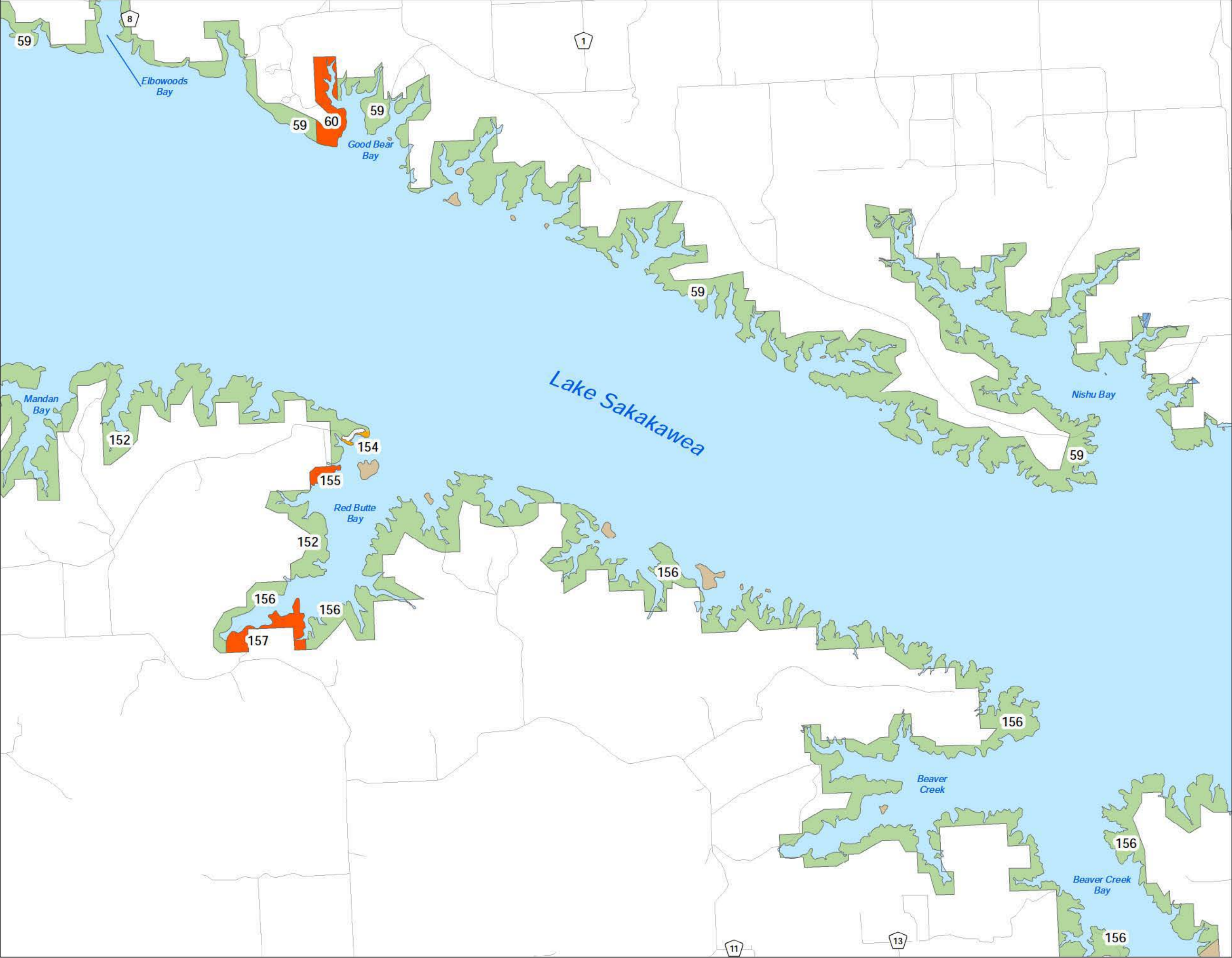
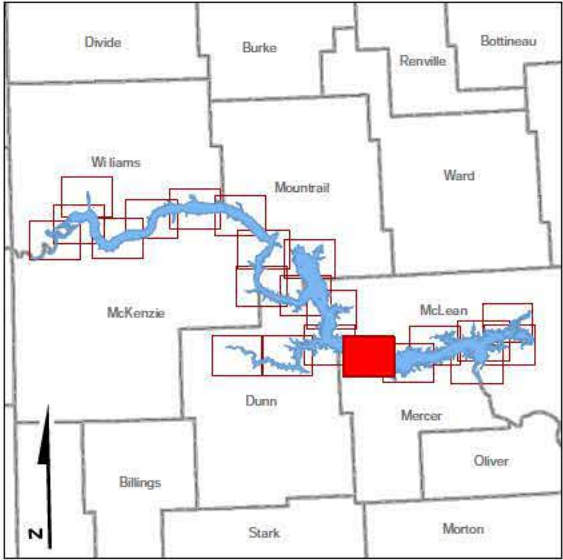
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Garrison Project / Lake Sakakawea

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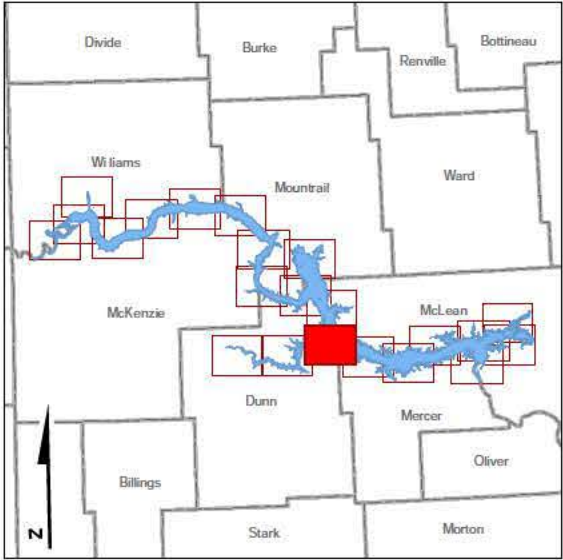
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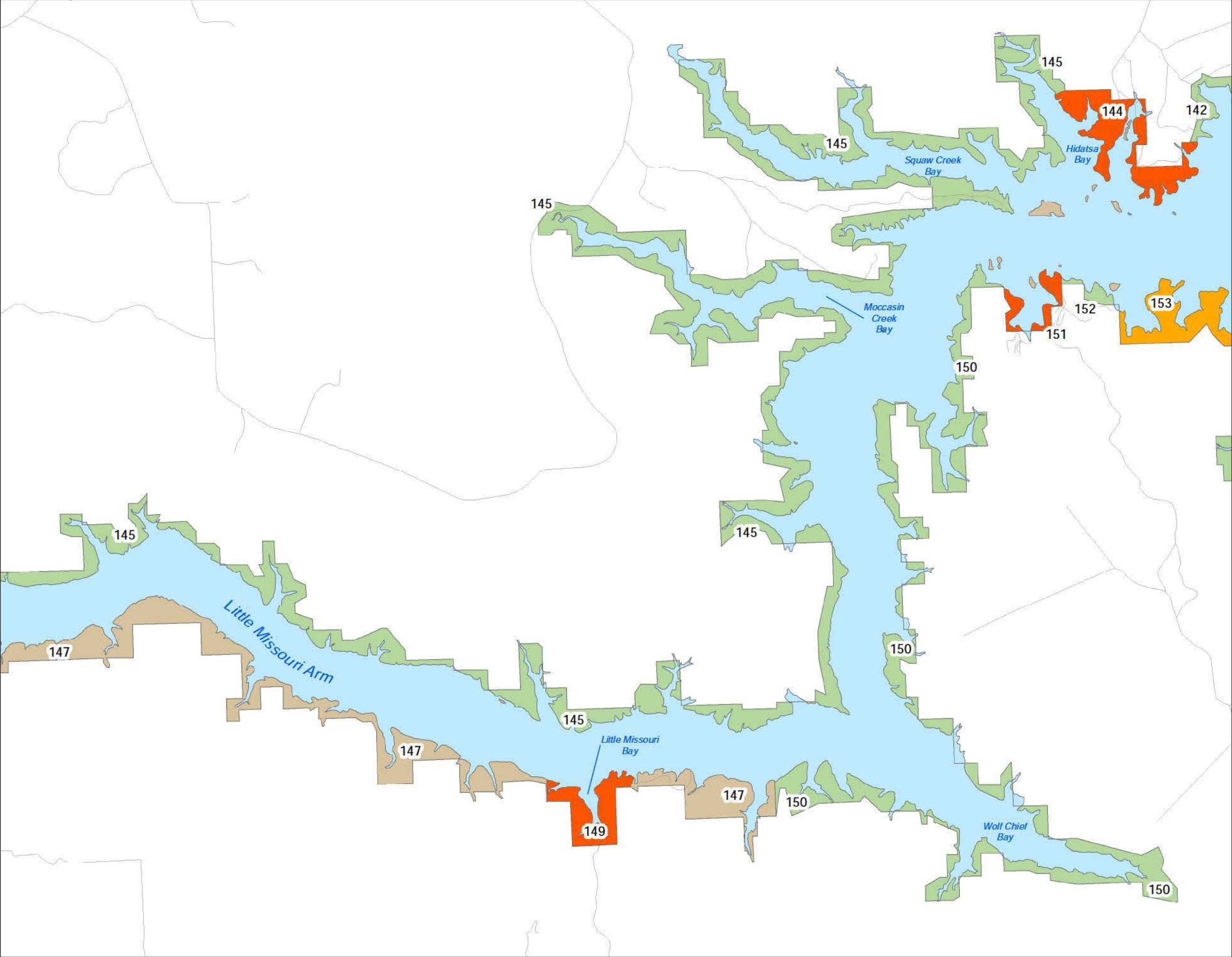
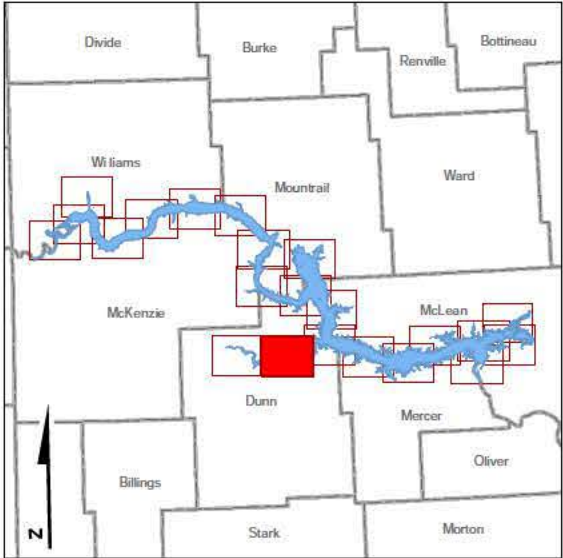
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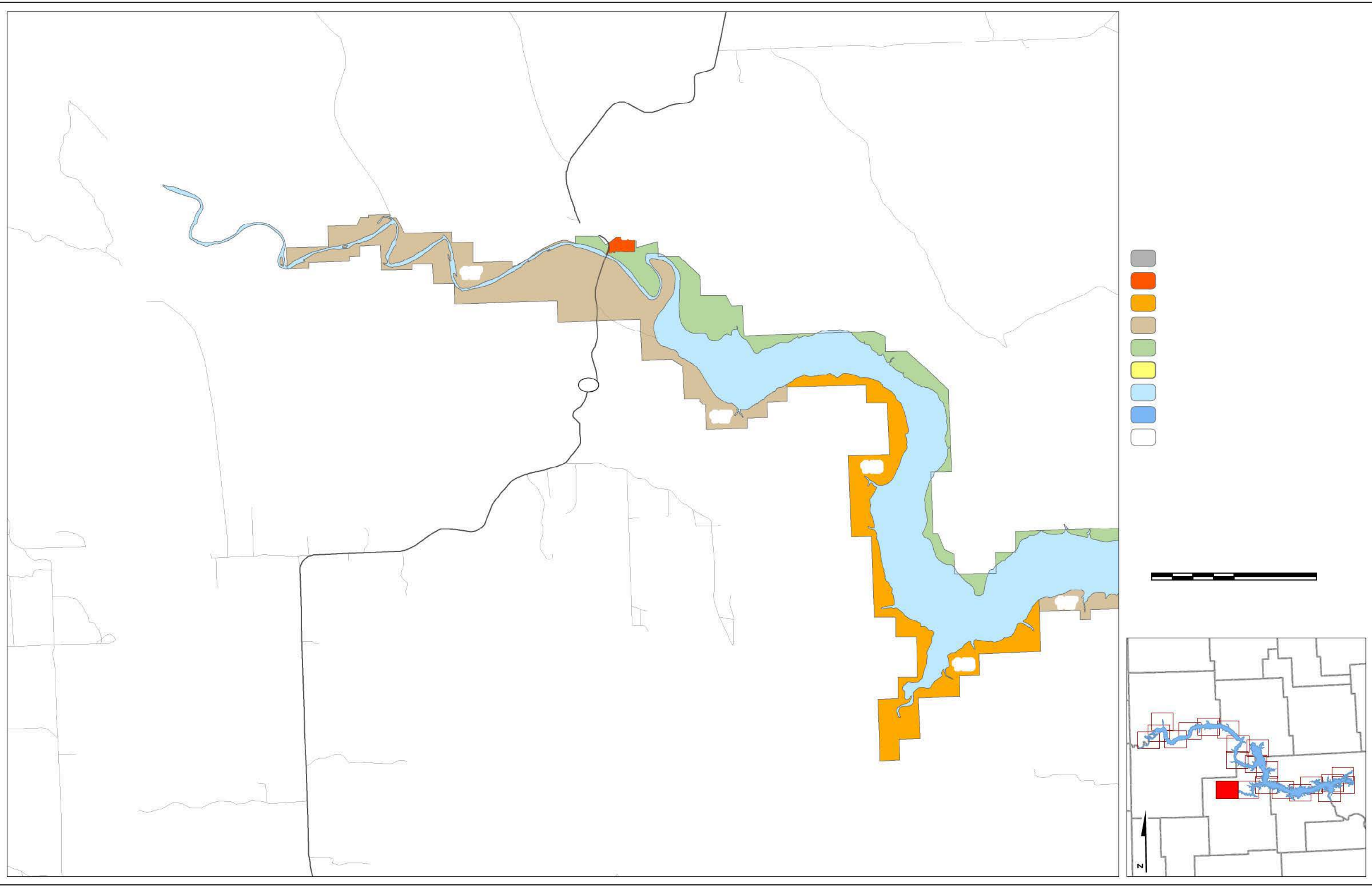
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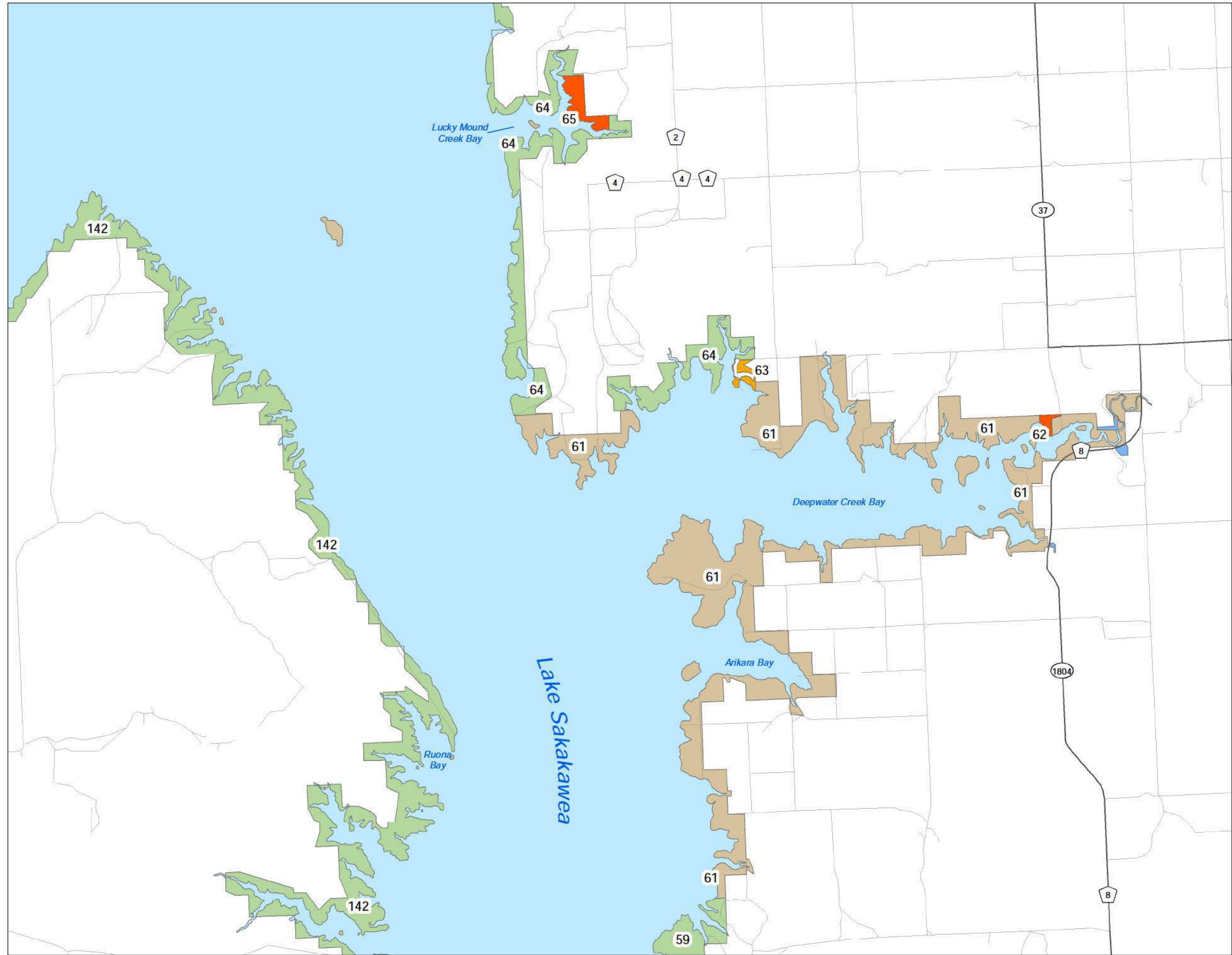
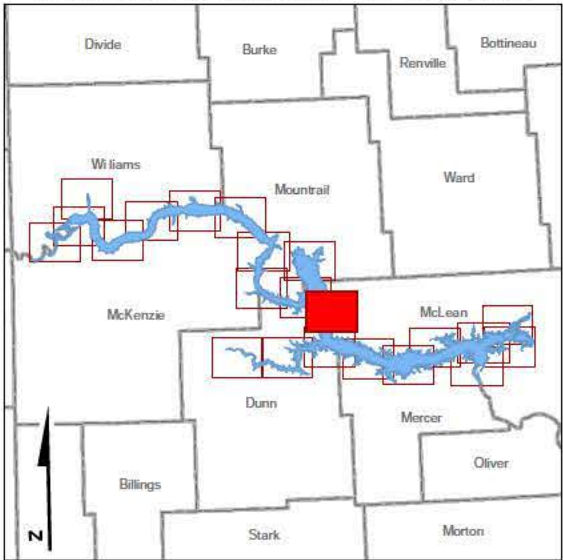
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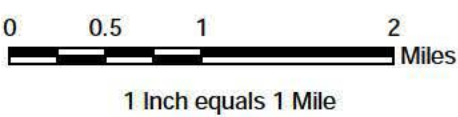
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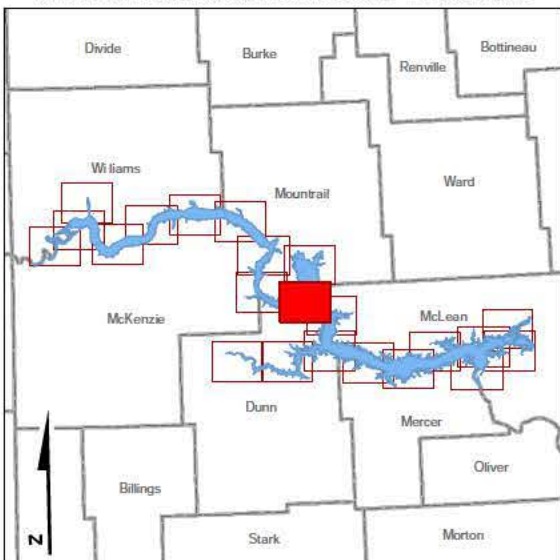


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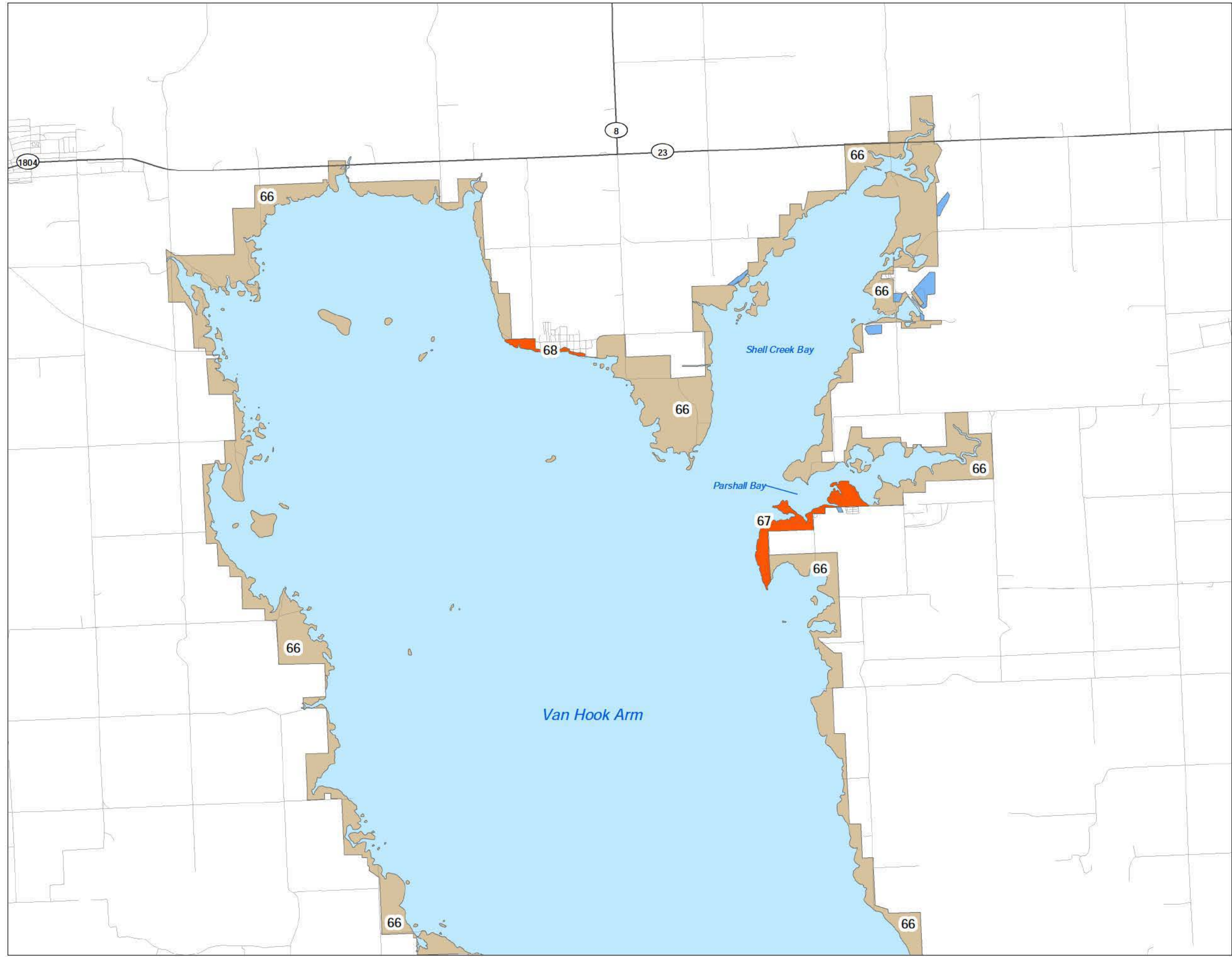




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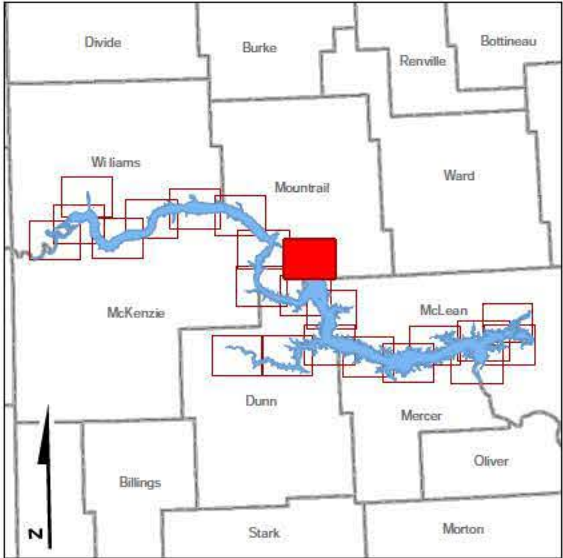
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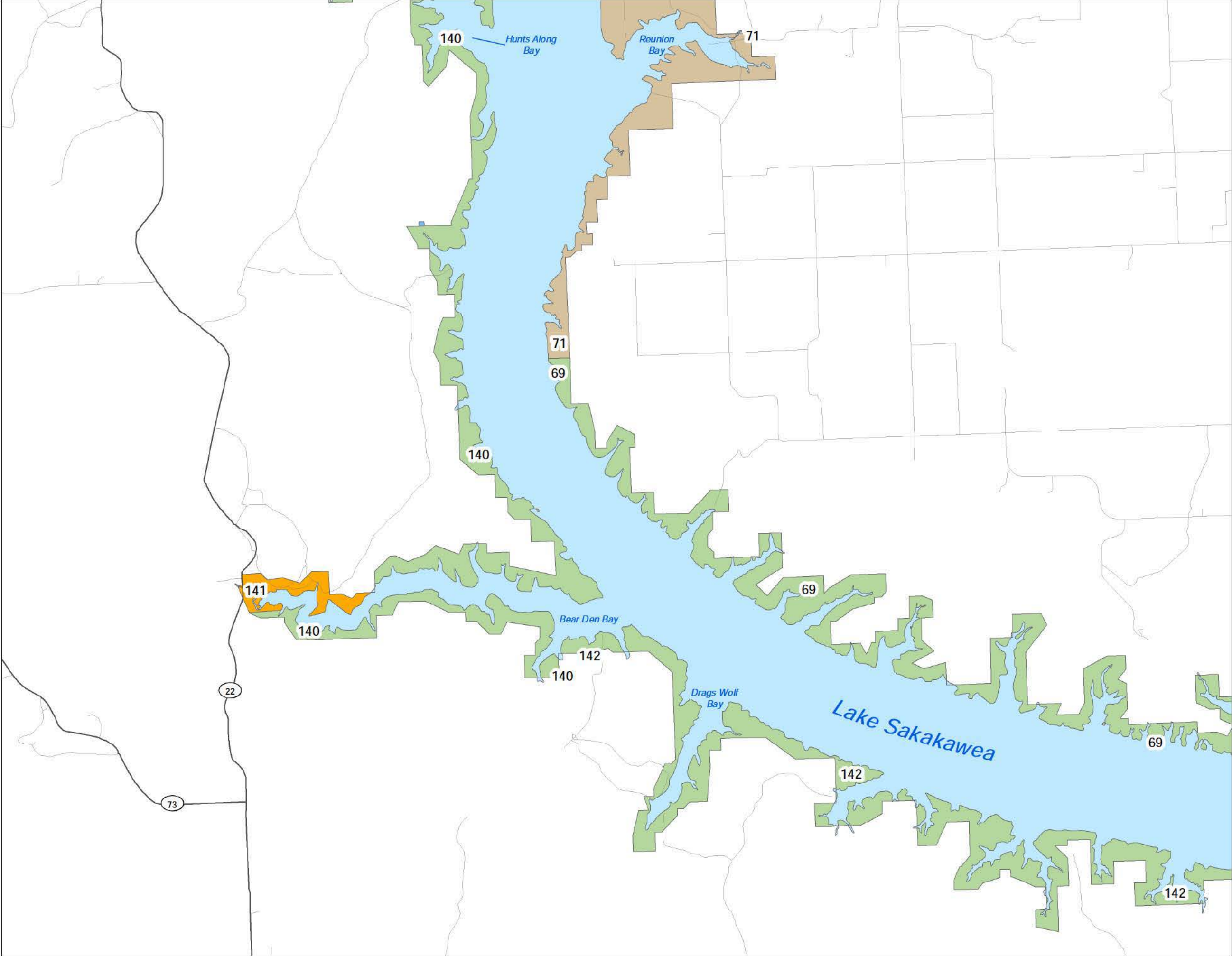
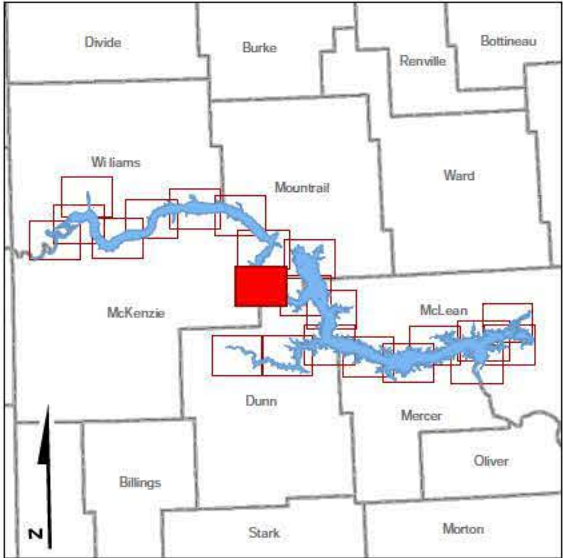
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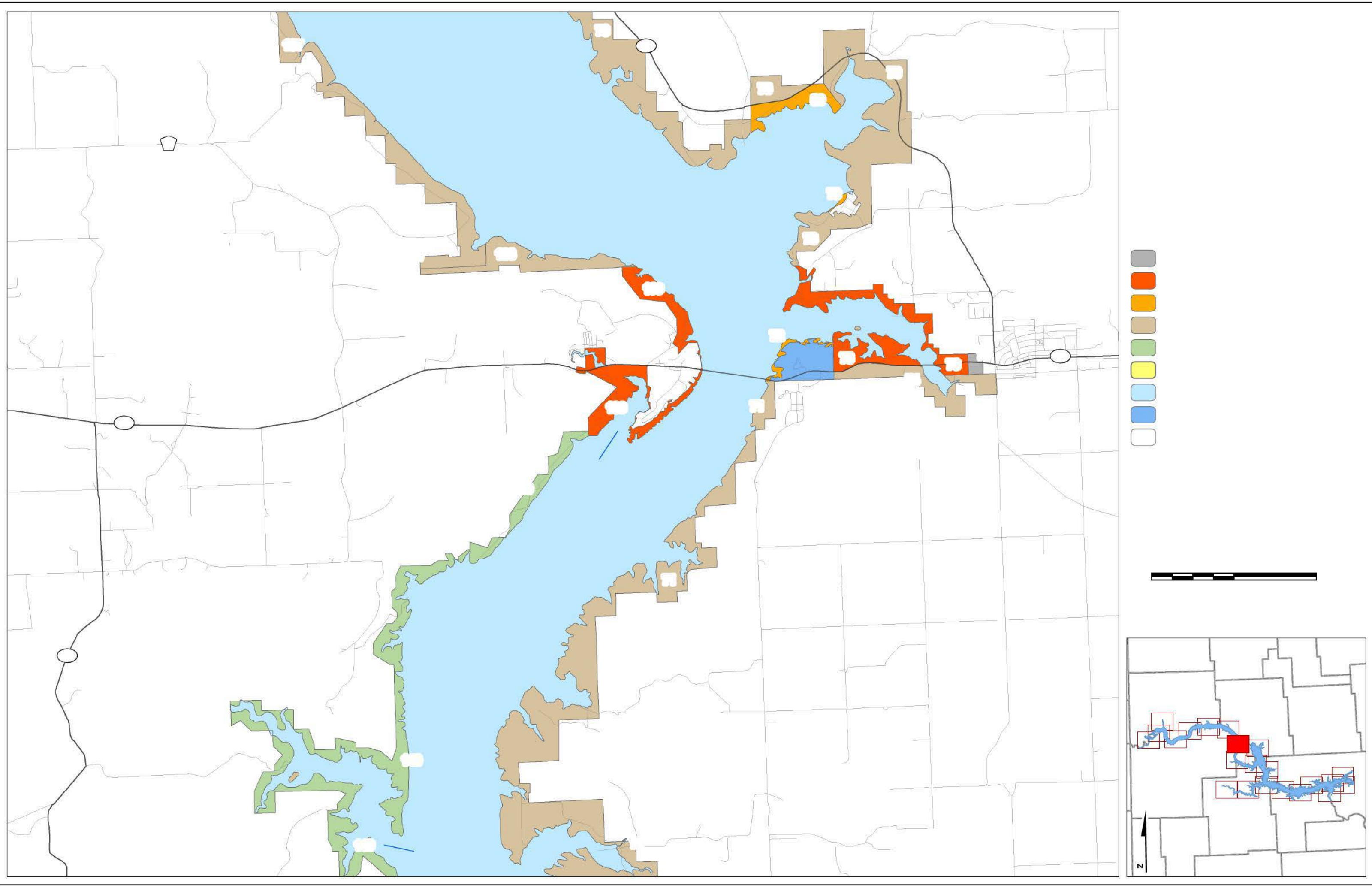
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Garrison Project / Lake Sakakawea

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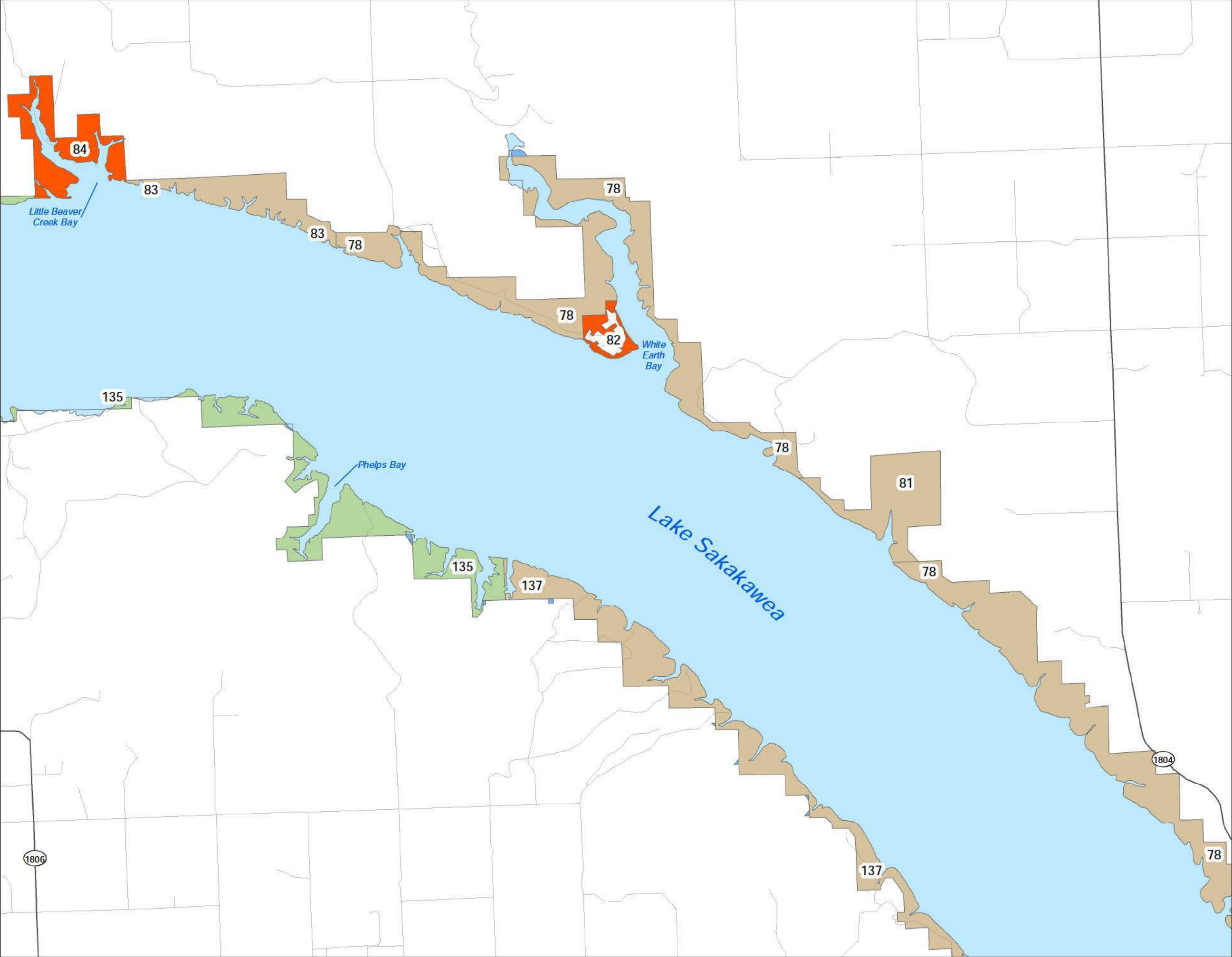
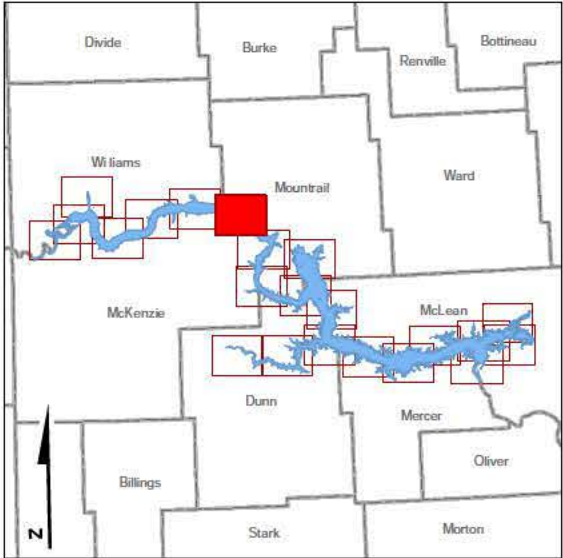
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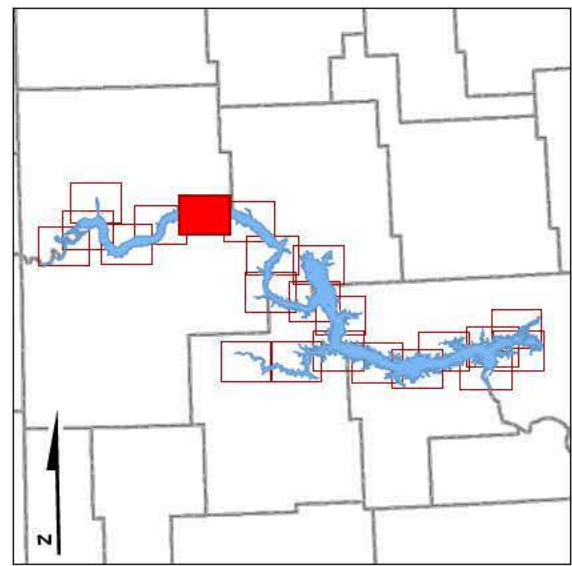
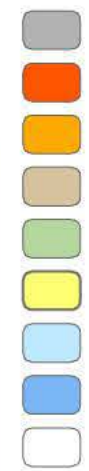
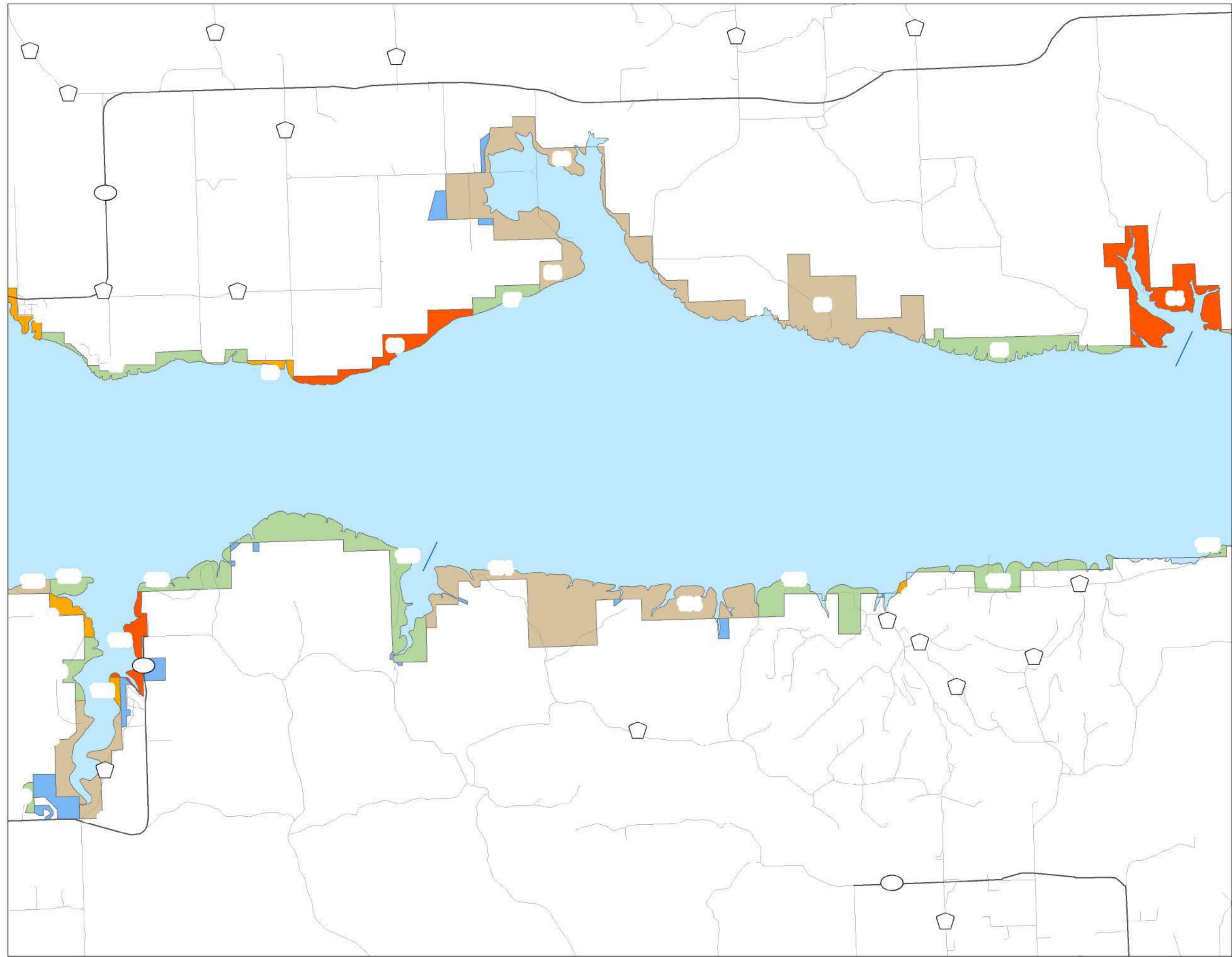
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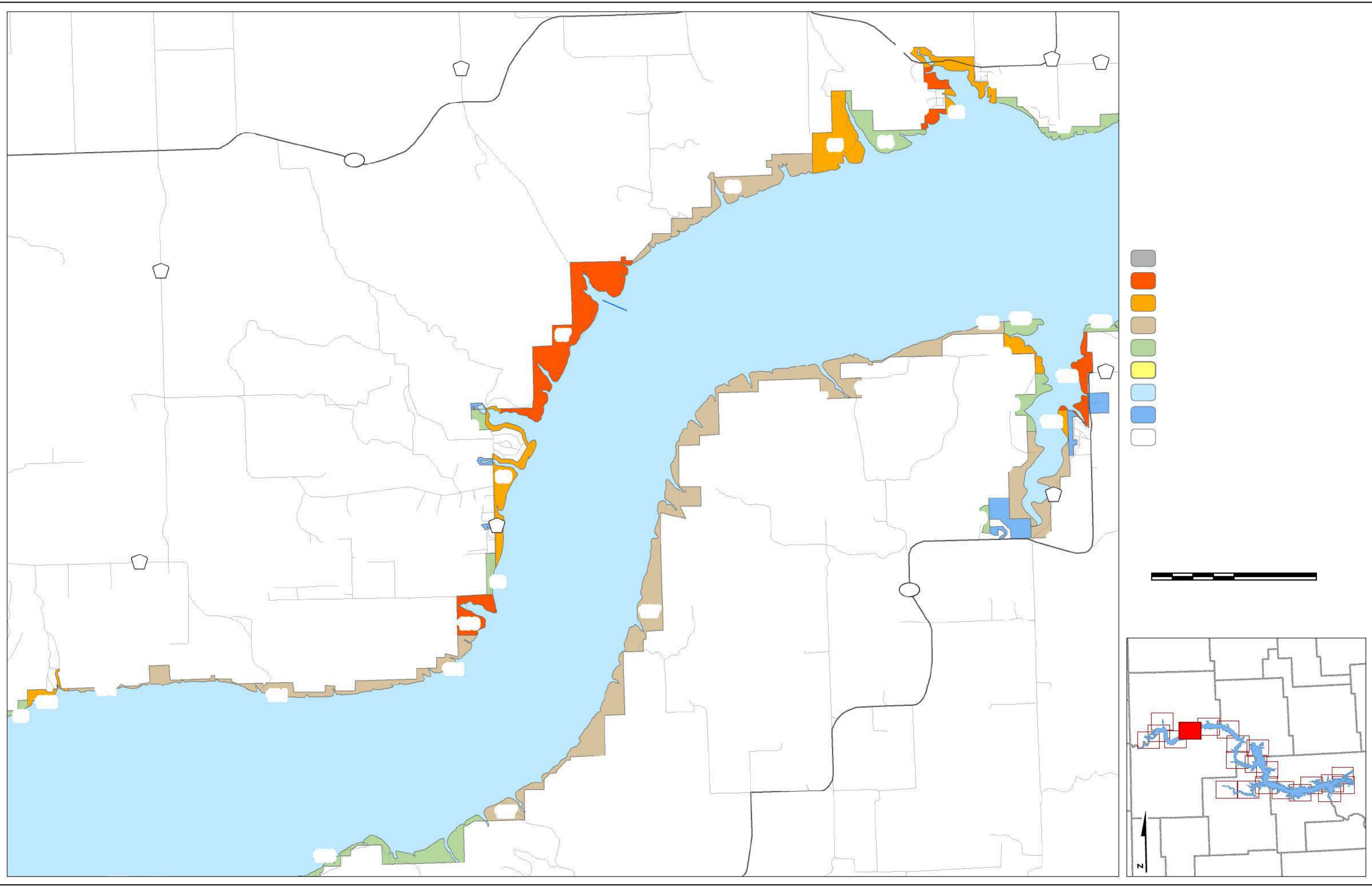
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# Master Plan

Garrison Project / Lake Sakakawea

Current Land Classification

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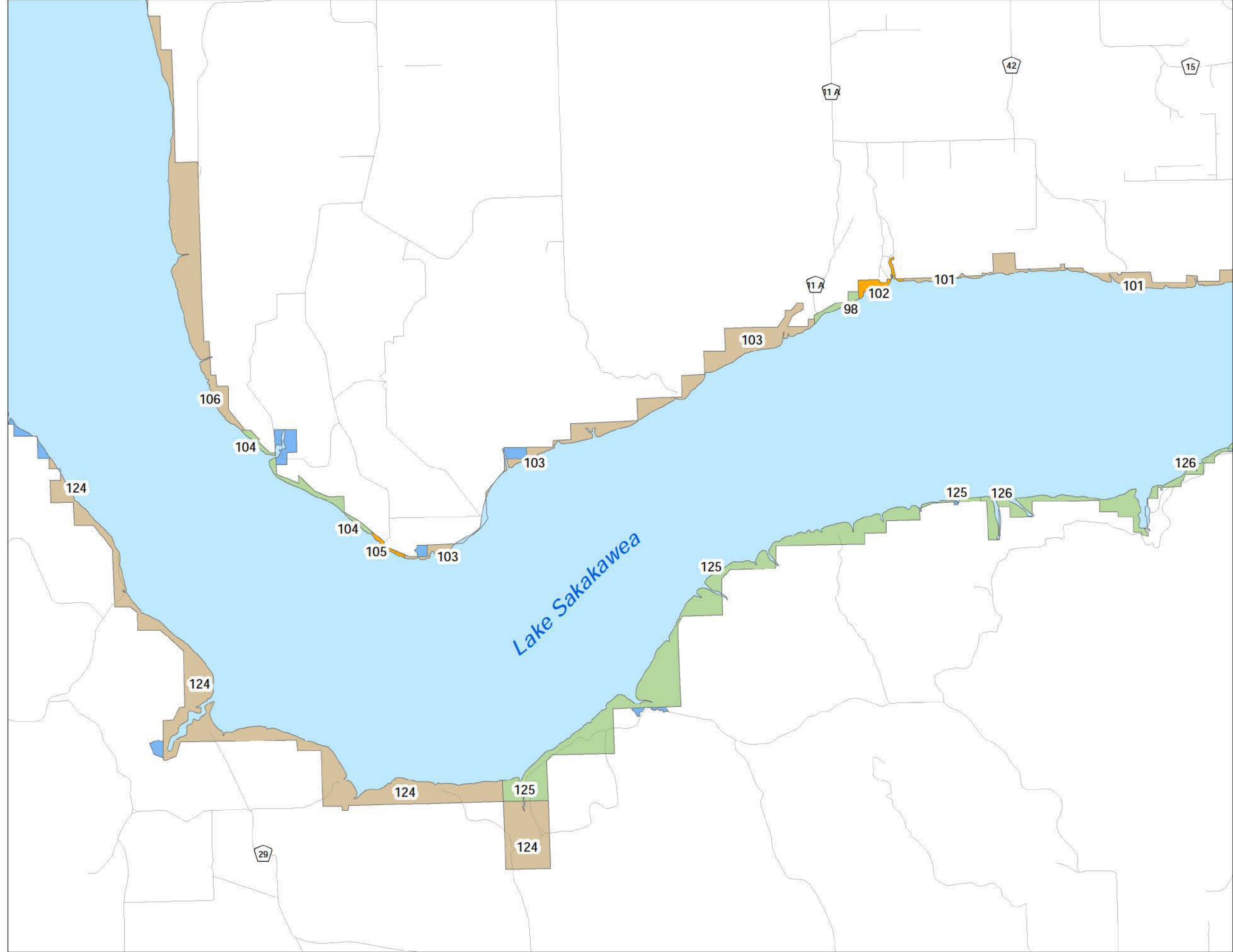
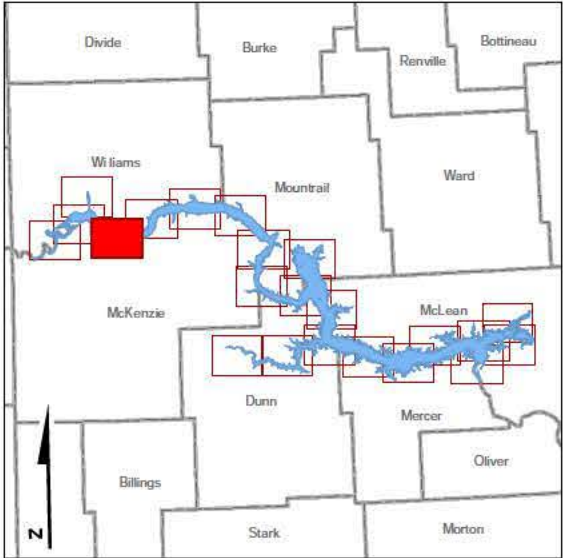
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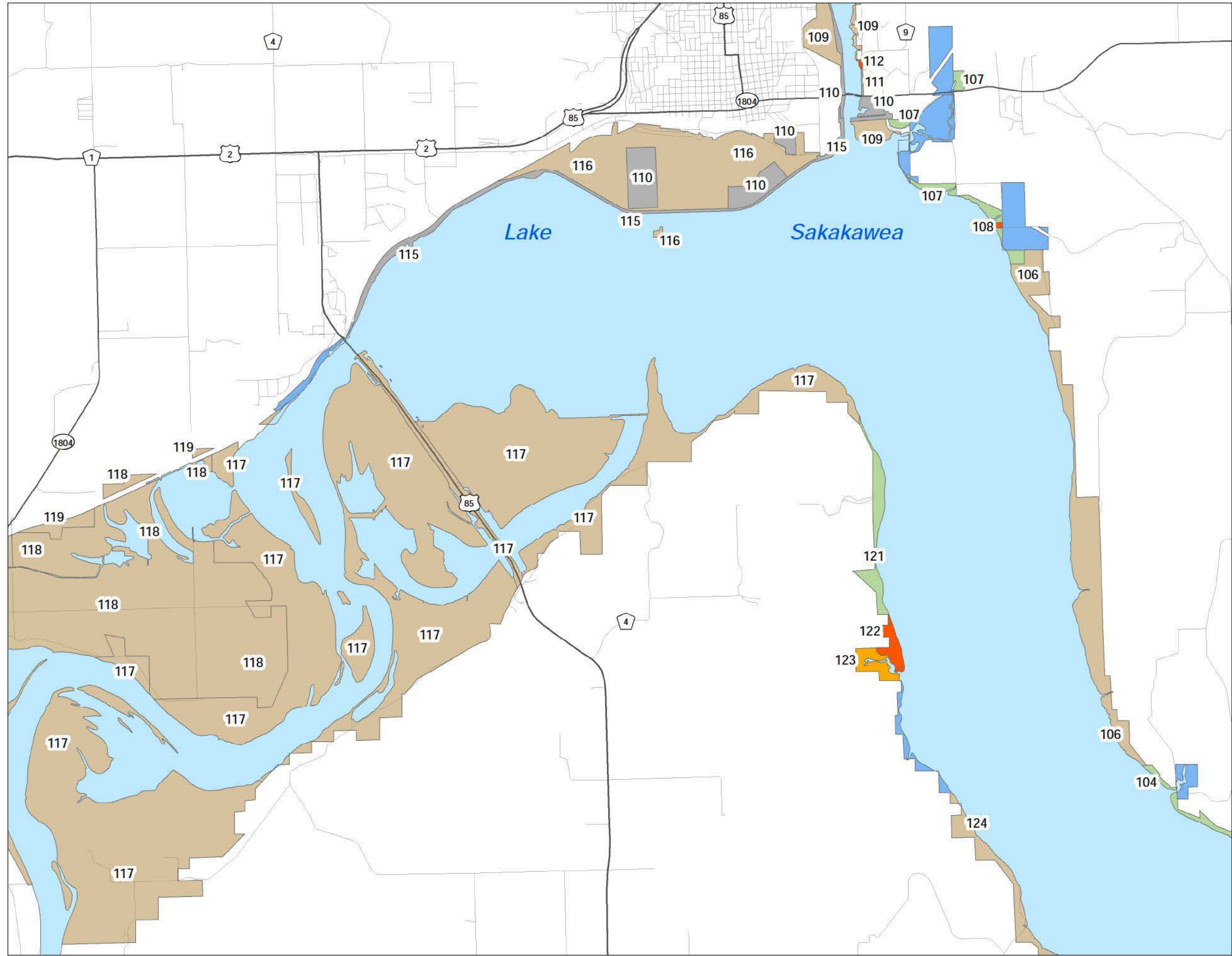


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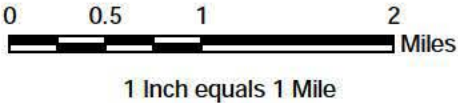




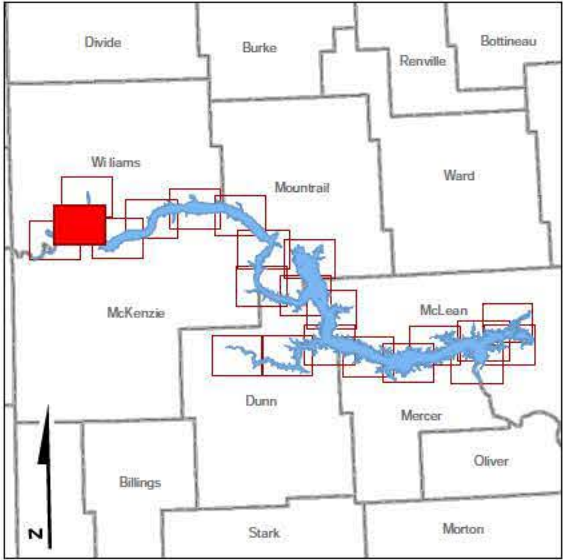


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# Master Plan

## Garrison Project / Lake Sakakawea

### Current Land Classification

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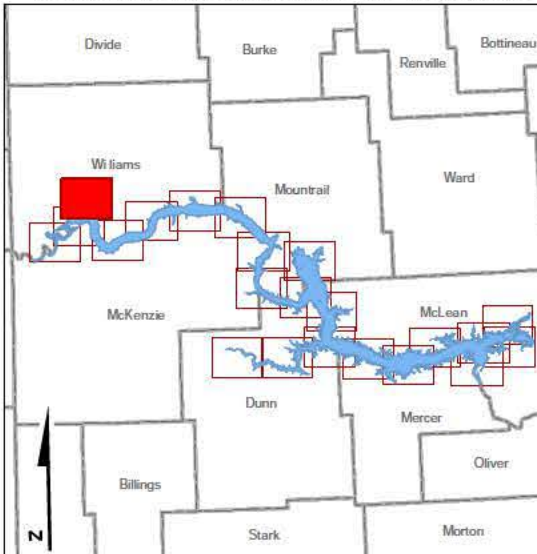
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# Master Plan

Garrison Project / Lake Sakakawea

Current Land Classification

## Land Classification

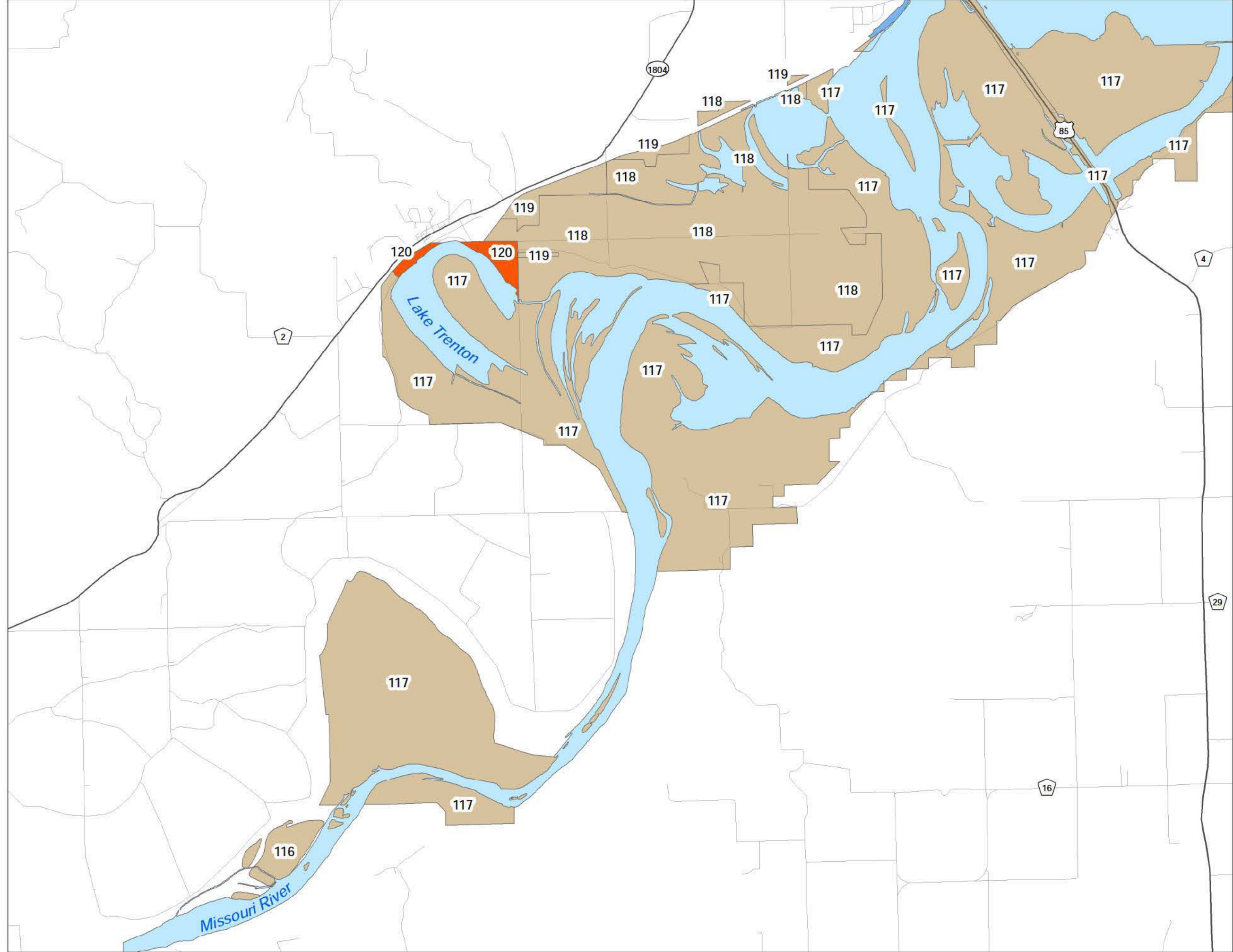
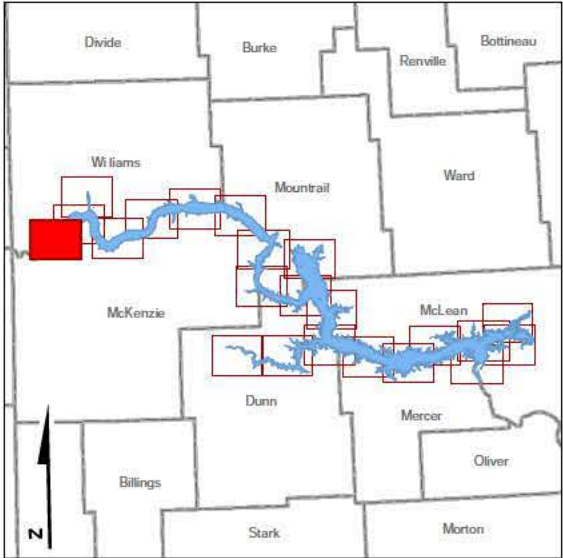
- Project Operations
- Recreation - Intensive Use
- Recreation - Low Density Use
- Wildlife Management
- Vegetation Management
- Environmentally Sensitive
- Water
- Lake Easement
- Private Property

Sheet 22 of 22



1 Inch equals 1 Mile

U.S. Army Corps of Engineers / Omaha District - Omaha, Nebraska  
Operations - Natural Resources Section (J. Cowman | 01 Oct 07)  
...\\Garrison Master Plan Plus\\md\\garrison master plan maps - data compilation.mxd



## **APPENDIX B PERTINENT DATA**

### **GENERAL**

Location of Dam	The dam is located near Garrison, North Dakota, on the Missouri River about 1,390 miles from its mouth (1960 mileage).
Operating and Management Agency	U.S. Army Corps of Engineers
Purposes	Flood control, navigation, irrigation, hydropower, municipal and industrial water supply, fish and wildlife, recreation, and other purposes.
Authorization	Flood Control Act of 22 December 1944, as amended (Public Law 534, 78th Congress)
Year Construction Started	1946
Year Dam Placed in Operations	1955
Project Cost	\$305,274,000 (as of September 1999)

### **DAM AND EMBANKMENT**

Type of Fill	Rolled earth filled
Fill Quantity	66.5 million cu. yd.
Abutment Formations (under dam and embankment)	Fort Union clay shale
Top of Dam Elevation	1875 ft. m.s.l.
Length of Dam (including spillway) at Crest	11,300 ft.
Damming Height (height from low water to maximum operating pool)	180 ft.
Maximum Height (from average streambed to top of dam)	210 ft.
Width at Top	60 ft.
Base Width –	
With Berms	3,400 ft.
Without Berms	2,050 ft.

### **SPILLWAY**

Location	Left Bank - adjacent
Type	Concrete lined chute with gated overflow weir
Crest Elevation	1825 ft. m.s.l.
Width (including piers)	1,336 ft.
Types of Gates, Number, Size	Tainter, 28, each 40 ft. x 29 ft.
Design Discharge Capacity	827,000 c.f.s.
At Elevation 1,858.5 ft. m.s.l.	
Discharge Capacity at Maximum Operating Pool Elevation 1854 ft. m.s.l.	660,000 c.f.s.

## OUTLET WORKS

Location	Right Bank
Number and Size of Conduits	One 26-ft. diameter, two 22-ft. diameter
Length of Conduits	1529 feet
Number, Size, and Type of Service Gates	One 18 ft. x 24.5 ft. Tainter gate per conduit
Entrance Invert Elevation	1672 ft. m.s.l.
Avg. Discharge Capacity per Conduit & Total	30,400 c.f.s & 98,000 c.f.s. at 1854 ft. m.s.l.
Present Tailwater Elevation at Discharge	1670 ft. m.s.l. at 15,000 c.f.s. 1680 ft. m.s.l. at 60,000 c.f.s.

## POWER FACILITIES

Average Gross Head	161 ft.
Conduits	Five 29-ft. diameter, 25-ft. penstocks
Surge Tanks	65-ft. diameter, 2 per penstock
Type of Turbines, Number, Speed	Francis, 5, 90 r.p.m.
Discharge Capacity	41,000 c.f.s. at 150 ft. of head.
Generator Rating of Each Unit	Three 109,250 kW, two 95,000 kW
Plant Capacity	517,750 kW
Dependable Capacity	388,000 kW
Average Annual Energy Production	2,462 million kWh

## RESERVOIR

Total and Incremental Drainage Areas (includes 1,350 sq. mi. of noncontributing areas)	181,400 sq. mi.	123,900 sq. mi.
Length of Reservoir at Maximum Normal Operating Pool	Approximately 178 miles, ending near Trenton, North Dakota	
Shoreline at Elevation 1,420 ft. m.s.l.	1,340 miles	
Average Total Inflow	25,600 c.f.s.	
Storage Capacity at 1850 ft. m.s.l. (maximum normal operating pool)	22,332,000 acre-feet	
Maximum Operating Pool Elevation and Surface Acres	1854 ft. m.s.l.	380,000 acres
Maximum Normal Operating Pool Elevation and Surface Acres	1850 ft. m.s.l.	364,000 acres
Flood Control and Multiuse Pool	1850-1837.5 ft. m.s.l.	4,222,000 acre-feet
Inactive Storage Zone	1775-1673 ft. m.s.l.	4,980,000 acre-feet
Gross (from bottom of reservoir to top of exclusive flood control pool)	1854-1673 ft. m.s.l.	23,821,000 acre-feet
Estimated Annual Sediment Inflow and Reservoir Life	25,900 acre-feet	920 years

## APPENDIX C

### U.S. ARMY CORPS OF ENGINEERS REPORTS GARRISON DAM/LAKE SAKAKAWEA PROJECT

<b>Title</b>	<b>Date</b>
Definite Project Report	Jan. 46
Definite Project Report – Appendix I to III	Jan. 46
Definite Project Report – Appendix IV to XI	Jan. 46
Definite Project Report – Appendix XII to XIX	Jan. 46
Survey of Hydraulic Control Works	May 47
Report on Outlet Works Study	Oct. 47
Supplementary Report on Outlet Works Study	Nov. 47
A.D. Excavation and Main Embankment	May 48
Report No. 5 Test Grouting	Aug. 48
A.D. Intake Gates	Oct. 48
Preliminary Design Report – Powerplant	Jul. 49
Report of Test Tunnel – Part I	Aug. 49
A.D. Powerplant	Dec. 50
A.D. Snake Creek Embankment	Feb. 51
Report of Construction of Sheet Pile Cutoff	Feb. 51
Highway Bridge Crossing over Missouri River on Relocated ND Hwy 23 – Vicinity of Sanish, ND; Foundation Design	May 51
Highway Bridge Crossing over Missouri River on Relocated ND Hwy 23 – Vicinity of Sanish, ND; A.D. for Substructure	Jul. 51
Highway Bridge Crossing over Missouri River on Relocated ND Hwy 23 – Vicinity of Sanish, ND; A.D. for Superstructure	Nov. 51
A.D. Spillway Structures and Gates	Apr. 52
A.D. Penstocks and Surge Tanks	May 53
Spillway Stilling Basin, DM No. 1	Jun. 53
Report of Test Tunnel – Part II	Jul. 53
Protective Works in the Williston Area – Special Report for Congress	Dec. 53
Roadway Lighting & Project Power & Telephone Interconnections	Jan. 54
Protective Works – City of Williston	Feb. 54
Protective Works – City of Williston; Supplement No. 1	Jul. 56
Master Plan for Reservoir Development and Management	Feb. 54
Spillway Stilling Basin, DM No. 2	Sep. 54
East Abutment Grout Curtain Sections III & IV	Oct. 54
Williams County Road – Little Muddy Creek Bridge	Mar. 55
Boat Yard	Apr. 55
Seeding and Planting Recreation Areas	Apr. 55
Additional Surveys and Survey Equipment for Sediment Studies	Apr. 55
General Plan for Fish and Wildlife Management, Garrison Dam and Reservoir Project, North Dakota	Jun. 55 (Department of Interior)
Repairing and Sealing Access Highway and Temporary Townsite	Jul. 55
Williams County Roads; G.N. RR Overpass, Supplement No. 1	Oct. 55; Revised Nov. 55
Williams County Roads; Relocated East-West County Road and Little Muddy Creek Bridge, North of Williston, ND	Oct. 55; Revised Nov. 55

Protection Works, Lewis and Clark Irrigation District		Dec. 55	
Powerhouse Units 4 and 5		Dec. 55	
Radio Transmission Building		Feb. 56	
Williams County Roads; Stony Creek Crossing and Bridge Approaches		Mar. 56	
Snake Creek Pumping Plant		Mar. 56	
Hydraulic Model Investigation – Outlet Works and Spillway		Mar. 56	
Repairing and Sealing Street in Temporary Townsite		Jul. 56	
Bank Stabilization Work – Buford-Trenton Irrigation District		Aug. 56	
Riverdale Airport Improvement		Sep. 56; Revised Dec. 56	
Raise Lost Bridge and Approaches		Jan. 57	
Lewis and Clark Roads (Raise U.S. Highway 85)		Mar. 57	
Public Service Building and Appurtenances		Jun. 57	
Warning System for Protection of Floating Craft		Nov. 57	
Reservoir Access Roads, Parking Areas, Boat Launching Ramps, and Facilities for Public Health and Safety		Jul. 58; Revised Sep. 58	
Riverview Cemetery – Mountrail County, ND		Nov. 59	
Modified Downstream Drainage Facilities		Dec. 59-submitted May 60-approved	
Riverdale Sewage Treatment		Jan. 60	
Method of Providing Firm Power for Spillway and Riverdale Townsite		Jan. 60	
Terminal Facilities for Minot and Jamestown Lines and Misc. Switchyard Modifications		Mar. 60	
Main Control Shaft Treated Water Supply		Mar. 60-submitted Mar. 60-approved	
Minot and Jamestown Line Terminal Facilities		Mar. 60-submitted Aug. 60-approved	
Tailrace Protection		Jan. 62	
A.D. Spillway Bridge		No data	
DM # MGR #	Title	Submitted	Approved
1 to 99	Unassigned		
100	Consolidation of Facilities, Riverdale, ND	Jan. 61	-
100R	Consolidation of Facilities, Riverdale, ND (Revised)	Feb. 62	Apr. 62
101	Switchyard Drainage and Surfacing	Jul. 61	Oct. 61
102	Outlet Works Riprap Repair and Drains	Dec. 61	Feb. 62
103	Four Bears Bridge East Abutment Slope Protection	Jan. 62	May 62
104	Cathodic Protection of Intake Service Gates	Feb. 62	Mar. 62
105	Penstock Service Gate and Supporting Devices	Mar. 62	Sep. 62
106	Embankment Underseepage Treatment	Mar. 62	May 62
107	Additional Recreation Facilities	May 62	Jun. 62
107B(C2)	Additional Public Use & Access Facilities	Mar. 64	Oct. 64
107B(C3)	Additional Recreation Facilities	Dec. 64	May 65
108	Riverdale Airport Improvement	Jun. 62	-
109	Bank Stabilization, Buford-Trenton Irrigation District, Modifications to Pumping Plant	Aug. 62	Sep. 62
110	Centralization of Power Plant Controls	Jan. 63	-
110 (S1)	Supplement No. 1	Jul. 64	Jan. 65

111	Riverdale Air Strip	Jan. 63	-
112	Garrison Power Plant Office Bay Ventilation	May 63	Jun. 63
113	Additional Recreation Facilities	Jul. 63	Oct. 63
114	Cemetery Relocation Plan (Riverview Cemetery – NewTown, ND)	May 64	-
115	Repair of Upstream Riprap Protection	Jun. 64	Sep. 64
116	Appraisal and Rehabilitation of Relief Well System – Williston, ND	Aug. 64	Oct. 64
117	Snake Creek Embankment – Failure Report & Repair of Slope Protection	Nov. 64	Feb. 65
117(A)	Supplement A to MGR-117	Apr. 65	May 65
118	Repair of Four Bears Bridge East of Abutment Slope Protection	Feb. 65	Apr. 65
119	Part I of Rehabilitation of Slope Protection Reservoir Side, Snake Creek Embankment	Aug. 65	-
120	Alternate Water Line to Serve Riverdale	Jan. 66	Feb. 66
121	Sectionalizing of 230-KV Switchyard Relaying	Jan. 66	May 66
122	Swimming Pool, Riverdale, ND	Apr. 66	Jun. 66
107C	Updated Master Plan	Dec. 66	-
123	Snake Creek Embankment – Slope Protection Upgrading – Garrison Reservoir Side	Jan. 67	Apr. 67
123	Snake Creek Embankment – Slope Protection Upgrading – Garrison Reservoir Side, Appendix A	May 67	Aug. 67
123	Snake Creek Embankment – Slope Protection Upgrading – Garrison Reservoir Side, Appendix B	Aug. 67	Oct. 67
124	Proposed Access Road to Relocated Riverview Cemetery	Feb. 67	Jun. 67
125	Snake Creek Line Term. Facs.	Oct. 68	Jul. 69
126	Replacement of Water Supply Main in Power Plant Area	Apr. 69	May 69
127	Snake Creek Embankment Widening & Rehabilitation	Jan. 69	May 69
128	Williston Rehabilitation	Jun. 70	Apr. 71
128 (S1)	Williston Rehabilitation – Supplement 1	Apr. 72	-
128 (S2)	Williston Rehabilitation – Supplement 2	Feb. 74	Mar. 74
128 (S2)	Williston Rehabilitation – Suppl. 2, Letter Addition	Mar. 74	Apr. 74
129	REM – Williston	Apr. 71	-
130	Parshall Bay Public Use Area	Mar. 71	May 71
131	Powerhouse West Slope Drains	Mar. 71	Jun. 71
131 (S1)	Supplement No. 1	Sep. 76	Sep. 76
132	Congregational Cemetery Bank Stabilization	Dec. 71	-
132 (Rev.)	Congregational Cemetery Bank Stabilization (Rev.)	Mar. 72	Mar. 72
133	W. Terrace Gravel Underseepage Drains	Jan. 72	-
133 (Rev.)	W. Terrace Gravel Underseepage Drains (Rev.)	May 72	Jun. 72
133 (S1)	Supplement No. 1	May 74	-
134	Rehabilitate VanHook Township Road	Feb. 72	-
134 (Rev.)	VanHook Township Road Rehab (Rev.)	Jul. 72	Nov. 72
135	Modifications to Control Room Lighting	Jun. 72	Jun. 72
136	Boat Ramp Rehab – 7 Areas	Mar. 73	Apr. 72

137	Rehabilitation Water Sanitary Facilities. D.S.P.U.A.	Feb. 74	Feb. 75
137 (S1)	Supplement No. 1	Nov. 76	Aug. 77
138	Spillway Tainter Gate Hoist Modification	May 75	Jun. 75
107D	Updated Master Plan (A-E)	Jun. 77	Oct. 78
107D	Updated Master Plan (A-E), Appendix B (Natural Resources Management Plan)	May 77	Jun. 78
139	Penstock Area Elevator	Jun. 75	Sep. 75
139 (S1)	Supplement No. 1	Jun. 76	Aug. 76
140	Temporary Information Center	Dec. 75	Mar. 77
141	Protective Works, Williston (Riprap)	Jan. 76	Jul. 77
142	Protective Works, Williston (Interior Drainage)	May 76	Jun. 76
143	Lake Audubon Study	Sep. 76	-
144	Generators 4 & 5 Uprating	Dec. 76	Feb. 77
145	Gen. Thrust BRNG Hilift Systems, Units 1, 2, & 3	Jan. 77	Feb. 77
146	Buford Trenton Drainage Problem	Jan. 77	Mar. 78
147	County Road (McLean) Raise	Jul. 78	Jun. 79
148	Protect & Rehabilitate Government Boat Dock	Jul. 78	Dec. 80
149	Williston Water Intake-Relocation	Sep. 78	Oct. 78
150	Power House Electric Shop Replacement	Jul. 80	Oct. 80
151	Comfort Station Rehabilitation	Mar. 80	-
152	Surge Tank Winterization	Feb. 82	-
153	Water Treatment Facility	Feb. 82	Mar. 82
	General Plan For Use of Project Lands and Waters For Wildlife Conservation & Management at Lake Audubon (by ND Game & Fish Department)	-	Jun. 82 (Dept. of Interior)
	General Plan For Use of Project Lands and Waters For Wildlife Conservation & Management at Lake Audubon (by U.S. Fish & Wildlife Service)	-	Jun. 82 (Dept. of Interior)
154	Rehabilitate Utility Shop and SW Shopping Center	Jun. 82	Jul. 82
154 (Rev.)	Rehabilitate Utility Shop and SW Shopping Center, Revised	Sep. 82	Nov. 82
155	Water Supply Facility	Jun. 82	Oct. 82
	General Plan For Use of Project Lands and Waters For Wildlife Conservation & Management At Garrison Dam-Lake Sakakawea, North Dakota	-	Jan. 83 (Dept. of Interior)
156	Replace Electrical Distribution System	Feb. 83	Mar. 83
157	Williston Area – Gravity Control Structure	Nov. 82	Jun. 83
158	Crest Road Lights	Sep. 84	Oct. 84
159	Unit Voltage Regulator Replacement	May 83	Jun. 83
160	Rewind Garrison Generator, Unit No. 1, 2, & 3	Nov. 83	Dec. 83
161	Seismic Evaluation and Analysis	Sep. 84	Sep. 84
162	Maintenance Facility	Apr. 85	-
163	Proposal to Pump Spring Area (Seidler Slough)	-	-
164	Rehabilitate Administration Building	-	-
165	McLean County, ND Road 8 (Section 9 Proposal) - Seidler Slough	Mar. 86	-
107D (S1)	Supplement No. 1 – Good Bear Bay (Indian Hills)	Mar. 84	Mar. 84
107D (S2)	Supplement No. 2 – Development at DeTrobriand Bay	Jul. 84	Jul. 84

107D (S3)	Supplement No. 3 – Land Allocation Revision, Arrowhead Resort Recreation Area	Jul. 86	Sep. 86
107D (S4)	Supplement No. 4 – Land Allocation Revision, Lake Shore Park Area	Mar. 88	Apr. 88
107D (S5)	Supplement No. 5 – Skunk Creek Bay	Nov. 89	Dec. 89
107D (S6)	Supplement No. 6 – Little Egypt Centennial Park	Dec. 89	Dec. 89
107D (S7)	Supplement No. 7 – Modified Development, Four Bears Area	Nov. 90	Dec. 90
107D (S8)	Supplement No. 8 – Government Bay Marina & Campground	Nov. 93	Feb. 94
107D (S9)	Supplement No. 9 – Land Classification Revision, Cut Bluff Expedition Overlook	Apr. 03	May 03
107D (S10)	Supplement No. 10 – Lease Expansion/Trail Development, Indian Hills Recreation Area	Nov. 04	Nov. 04
166	Renovation of Spillway Tainter Gates	Aug. 92	Approved (date n.a.)
	Major Rehabilitation Evaluation Report, Garrison Dam and Power Plant	Mar. 95	Aug. 95
	Garrison Reconnaissance Report for Generator Stator Rewind Units 4 and 5	Mar. 98	Approved (date n.a.)
	Major Rehabilitation Evaluation Report Addendum	Aug. 04	Sep. 04
107D (Update)	Master Plan with Integrated Programmatic Environmental Assessment		



## APPENDIX D

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## APPENDIX E

### PUBLIC INVOLVEMENT

Scoping comments on the Garrison Dam/Lake Sakakawea Master Plan/EA were solicited from federal and state agencies at an agency scoping meeting held July 7, 2005, in Bismarck, North Dakota (ND) and from the general public at four public workshops held August 8-11, 2005, at Beulah, Garrison, New Town, and Williston, ND. The text sent to publications is on page E-2. Comment cards and handouts provided at these workshops were included in-Appendix E of the Draft Master Plan/EA.

Scoping comments received at or after the above meetings and prior to the end of the public comment period at the end of September 2005 were responded to coordinately by members of the Corps staff, other federal and state agency representatives, and Steering Committee members. The comments and consolidated responses were organized by topic and posted on the Corps' external Web site. They appeared in Appendix E of the Draft Master Plan/EA.

The table below provides the context and/or format of scoping comments received from Tribes and from federal and state agencies. The three agency letters containing scoping comments were provided in Appendix E of the Draft Master Plan/EA.

AGENCY	SCOPING COMMENTS PROVIDED
Three Affiliated Tribes	At public workshops & Steering Committee meetings
Trenton Indian Service Area	At Steering Committee (SC) meetings
Senator Byron Dorgan's Office	At agency scoping meeting and SC meetings
Bureau of Indian Affairs	At public workshops and SC meetings
Environmental Protection Agency	Email 11-18-05 indicating no specific comments at this time
Natural Resource Conservation Service	Attended agency scoping meeting and mailed letter dated 10-26-05 stating no comments at this time
U.S. Bureau of Reclamation	Email 11-1-05 stating no comments at this time
U.S. Fish and Wildlife Service	At public workshops and SC meetings
U.S. Geological Survey	Email 11-3-05 stating no comments
ND Army National Guard	No scoping comments; telephoned information regarding two Weekend Training Sites managed by NDNG
ND Department of Agriculture	At SC meetings and letter dated 10-31-05
ND Department of Health	No scoping comments
ND Department of Transportation	No scoping comments; provided telephone / email information on trails / road improvements 11-3-05
ND Forest Service	At agency scoping meeting
ND Game and Fish Department	At public workshops, SC meetings, letter of 11-14-05
ND Parks and Recreation Department	At agency scoping meeting, public workshops, and SC meetings
ND State Historical Society	At SC meeting
ND State Water Commission	At agency scoping meeting, public workshops, SC meetings, and letter dated 11-7-05

## Lake Sakakawea Master Plan workshops scheduled

The U.S. Army Corps of Engineers has begun work to revise and update the Lake Sakakawea Master Plan. The current master plan, which guides the development and management of natural and cultural resources and recreation-related facilities in and around the reservoir, was prepared in 1978. Ten supplements have been added since that time. Other widespread changes have taken place over the years resulting in a need to update the current document.

“A steering committee made up of stakeholders and Tribal state and federal agencies has been formed to help guide the two-year process,” says Corps Project Manager Steven Rowe. “We’re hopeful that the public will help us by sharing their thoughts about the future management of Lake Sakakawea’s land base.”

Four open house workshops will be held to encourage public involvement.

Aug. 8	Beulah Civic Center, Beulah, N.D. (4:30 – 7:30 MST)
Aug. 9	Garrison City Auditorium, Garrison, N.D. (4:30 – 7:30 CST)
Aug. 10	New Town Civic Center, New Town, N.D. (4:30 – 7:30 CST)
Aug. 11	El Rancho Motel, Williston, N.D. (4:30 – 7:30 CST)

Interested individuals can also submit their ideas, questions and concerns to the steering committee through the project Web site:

[https://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/welcome.html](https://www.nwo.usace.army.mil/html/Lake_Proj/garrison/welcome.html) or by contacting the Corps at the Garrison Project Office, P.O. Box 527, Riverdale, ND, 58565, 701-654-7411 or the Omaha District Public Affairs Office, 888-835-5971 toll free.

The above text was provided to the following news media:

Associated Press, Bismarck	KBYM-TV, Bismarck
The Bismarck Tribune	KFYR-TV, Bismarck
Dickinson Press	KXMB-TV, Bismarck
Minot Daily News	KXMA-TV, Dickinson
Williston Daily Herald	KXMD-TV, Williston
Turtle Mountain Times, Belcourt	KEYA-FM, Belcourt
Beulah Beacon	KHOL, Beulah
McLean County Independent, Garrison	KCAD/KLTC-FM, Dickinson
McLean County Journal, Turtle Lake	KDIX, Dickinson
Hazen Star	KZRX-FM, Dickinson
New Town News	KMHA-FM, New Town
The Leader-News, Washburn	KDSR-FM, Williston
McKenzie County Farmer, Watford City	KEYZ-AM/FM, Williston
The Plains Reporter, Williston	The Bismarck radio stations below:
Center Republican	KAVG/KBMR/KSSS/KXMR-FM
Mountrail County Record, Parshall	KFYR/KYYY-FM
Shoppers – XTRA	KACL/KKCT/KLXX/KBYZ-FM
Dollar Saver	KMPR/KPPR/KPRJ/KCND/KDPR-FM

The Omaha District provided a news release dated July 24, 2007, announcing Public Workshops on the Draft Garrison Dam/Lake Sakakawea Master Plan/EA to the above media and to the MHA Times, New Town. Paid advertisements were also placed in many of the newspapers. The text of the news release follows.

## **Public Workshops for Lake Sakakawea Master Plan and Environmental Assessment to be held Aug. 13-16**

The U.S. Army Corps of Engineers, along with a steering committee made up of stakeholders including non-governmental organizations and tribal, state and federal agencies, continues to revise and update the Lake Sakakawea Master Plan.

Five open house style workshops will be held to encourage public comment on the Draft Lake Sakakawea Master Plan and Environmental Assessment:

- Aug. 13 Bismarck, N.D., Bismarck Public Library, 515 N. 5<sup>th</sup> Street (5:30-7:30 CST)
- Aug. 14 Dickinson, N.D., Days Inn, 532 15<sup>th</sup> Street (5:30-7:30 MST)
- Aug. 15 Williston, N.D., Civic Center/Keel Boat at Spring Lake Park (5:30-7:30 CST)
- Aug. 15 New Town, N.D., Civic Center, 103 Soo Place (5:30-7:30 CST)
- Aug. 16 Minot, N.D., Civic Auditorium, 420 3<sup>rd</sup> Ave., SW (5:30-7:30 CST)

The public attended similar workshops in August 2005. The committee has been working on the document for more than two years. "We are pleased that we were able to update the outdated plan that governs the shoreline use around Lake Sakakawea," says Lake Manager Phil Brown. "The original master plan was drafted in 1978 and has been amended many times over the years. We feel we have a document that more clearly reflects present and future uses of the shoreline. We invite the public to review the draft and give us their input on areas of the plan that still need additions or improvements."

A copy of the Draft Lake Sakakawea Master Plan and Environmental Assessment is available at the Corps' Web site: [https://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/MP/mpupdate.html](https://www.nwo.usace.army.mil/html/Lake_Proj/garrison/MP/mpupdate.html). Copies are also available at the following public libraries:

- Alfred Dickey Public Library, 105 3<sup>rd</sup> St. SE, Jamestown, ND 58401
- Beulah Public Library, 116 North Central Ave., Beulah, ND 58523
- Bismarck Public Library, 515 N. Fifth St., Bismarck, ND 58501
- Dickinson Public Library, 139 3<sup>rd</sup> St. West, Dickinson, ND 58601
- Fargo Public Library, 102 Third St. North, Fargo, ND 58102
- Fort Berthold Public Library, FBCC P.O. Box 788, New Town, ND 58763
- Garrison Public Library, P.O. Box 67, Garrison, ND 58540
- Grand Forks Public Library, 2110 Library Circle, Grand Forks, ND 58201
- Hazen Public Library, 203 E. Main, P.O. Box 471, Hazen, ND 58545
- Mandan Public Library, 609 W. Main St., Mandan, ND 58544
- McKenzie County Public Library, 112 2<sup>nd</sup> Avenue NE, Watford City, ND 58854
- McLean-Mercer Public Library, P.O. Box 505, Riverdale, ND 58565
- Minot Public Library, 516 2<sup>nd</sup> Ave. SW, Minot, ND 58701
- New Town Public Library, P.O. Box 308, New Town, ND 58763
- Sidney (Mont.) Public Library, 121 2<sup>nd</sup> Ave. NW, Sidney, MT 59270
- Williston Public Library, 1302 Davidson Dr., Williston, ND 58801

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Place  
Stamp  
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U.S. Army Corps of Engineers  
Omaha District  
ATTN: CENWO-OD-TN, J. Price  
106 South 15<sup>th</sup> Street  
Omaha, NE 68102

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US Army Corps  
of Engineers  
Omaha District

**Public Workshops**  
**Lake Sakakawea Master Plan**  
**Aug. 13-16, 2007**

The U.S. Army Corps of Engineers, along with a steering committee made up of stakeholders including non-governmental organizations and Tribal, state and federal agencies, continues to revise and update the Lake Sakakawea Master Plan.

Five open house style workshops are being held to encourage public comment on the Draft Lake Sakakawea Master Plan and Environmental Assessment. You are invited to review the draft and provide input on the future management of Lake Sakakawea's land base. Copies of the draft master plan are available on the Corps' Web site and at local public libraries.

**Public Meetings (5:30 – 7:30 p.m.)**

- Aug. 13 (CST) Bismarck Public Library, Bismarck, N.D.
- Aug. 14 (MST) Dickinson Days Inn, Dickinson, N.D.
- Aug. 15 (CST) Williston Civic Center/Keel Boat at Spring Lake Park, Williston, N.D.
- Aug. 15 (CST) New Town Civic Center, New Town, N.D.
- Aug. 16 (CST) Minot Civic Auditorium, Minot, N.D.

You may also submit your ideas, questions and concerns to the Steering Committee by returning this mailer, through the project Web site or by contacting the project manager at the telephone numbers listed below.

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[http://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/welcome.html](http://www.nwo.usace.army.mil/html/Lake_Proj/garrison/welcome.html)

402-221-4137 or Toll Free 888-835-5971



US Army Corps  
of Engineers  
Omaha District

## *Welcome to the Lake Sakakawea Master Plan Public Information Workshop*

We thank you for participating in our workshop today and encourage you to continue to share your ideas, questions and concerns with us as we move through the master planning process.

All of your comments related to the Master Plan are important to the success of this project. Comments received (by August 31, 2007) will be recorded and categorized by subject. All questions will be answered. Questions and answers will be published in the Master Plan, which will be available at your local public library and at the project Web site:

[https://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/MP/mpupdate.html](https://www.nwo.usace.army.mil/html/Lake_Proj/garrison/MP/mpupdate.html)

Tables will be provided to assist us with answering your questions and capturing your comments. Staff will be roving the tables to provide information and collect your comments.

**Greeting Table:** This station will give you a quick overview of the master planning process. Feel free to view the slide show and sign the Sign-In Sheet. Blank comment sheets are available and a receptacle will be provided for you to leave written comments.

**Recreation Table:** This station can answer questions about Recreation, Lake Access, Boat Docks, etc.

**Fish and Wildlife Table:** Questions related to Wildlife Management, Threatened and Endangered Species, etc. can be answered at this table.

**Natural Resources Table:** This station can help you with concerns about Vegetative Management, Mineral Leases, Ag/Grazing Leases, Environmental Stewardship, etc.

**Cultural Resources Table:** This table will provide information on cooperation and coordination on a variety of cultural resource protection issues.

**Environmental Assessment:** Information on the National Environmental Policy Act (NEPA) and how it was incorporated into this Master Plan can be explained at this table.



US Army Corps  
of Engineers  
Omaha District

## ***Master Plan vs. Master Manual*** ***(And Other Garrison Dam/Lake Sakakawea Related Issues)***

A *master plan* is developed for the *land base* of each Corps lake project and only addresses land-based management. For more information about the ***Lake Sakakawea Master Plan***, go to:

<http://www.nwo.usace.army.mil> and click on "Hot Topics"

A *master plan* does not address the management of the water levels in the river system, nor does it address the Potential Transfer of Garrison Project Lands issue, or the Emergent Sandbar Habitat Construction Environmental Impact Statement (EIS). For more information about the

***Missouri River Master Manual or Spring Rise***, go to

<http://www.nwd-mr.usace.army.mil/mmanual/mast-man.htm>

or contact

Mr. Paul Johnston, Public Affairs Officer  
U.S. Army Corps of Engineers, Omaha District  
106 South 15<sup>th</sup> Street  
Omaha, Nebraska 68101-1618  
(402) 221-3918  
[Paul.T.Johnston@usace.army.mil](mailto:Paul.T.Johnston@usace.army.mil)

***Potential Transfer of Garrison Project Lands***, go to

<http://www.nwo.usace.army.mil/html/pa/pahm/land/home.htm>

or contact

Ms. Maggie Oldham, Public Affairs Specialist  
U.S. Army Corps of Engineers, Omaha District  
106 South 15 Street  
Omaha, Nebraska 68102-1618  
(402) 221-3916  
[Maggie.E.Oldham@usace.army.mil](mailto:Maggie.E.Oldham@usace.army.mil)

***Emergent Sandbar Habitat EIS***, go to

<http://www.nwo.usace.army.mil/html/pd-e/NEPA2.html>

or contact

Ms. Kelly Crane, ESH Program Manager  
U.S. Army Corps of Engineers, Omaha District  
106 South 15 Street  
Omaha, Nebraska 68102-1618  
(402) 221-4410  
[Kelly.A.Crane@usace.army.mil](mailto:Kelly.A.Crane@usace.army.mil)



"VARIETY IN HUNTING AND FISHING"

## NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

August 27, 2007

Ms. Julie Price  
Garrison Master Plan Project Manager  
Corps of Engineers, Omaha District  
106 South 15<sup>th</sup> Street  
Omaha, NE 68102-1618

Dear Ms. Price:

The North Dakota Game and Fish Department (NDGFD) has reviewed the 2<sup>nd</sup> draft of the new Master Plan (MP). The NDGFD made comments on the 1<sup>st</sup> draft including a letter from our Director, Terry Steinwand, outlining our major points of concern. Some of the Departments comments were included in the second draft while others were not. Many of our comments were editorial or grammatical in nature.

One major point of discussion was the need to match the Master Plan and the General Plan as closely as possible. The NDGFD provided maps showing areas where the plans differed, yet from what we can tell, no changes occurred on the maps for the 2<sup>nd</sup> draft. Please review the enclosed set of maps outlining the areas in the MP that don't match the wildlife designation in the General Plan and consider updating the MP maps to concur with the General Plan. We understand the COE is not interested in changing the East Spillway Area from Operations but will mention in the MP that the area is classified as General Plan Wildlife lands.

A second point would be the importance of the vegetation occurring on the exposed lake bed for terrestrial wildlife habitat and future fisheries habitat seems to be understated in the sections on opportunities during low and high water levels in Chapter Three. Only T&E species are mentioned in the description under "Opportunities: Wildlife" and we have provided several comments concerning the importance of this vegetation as habitat for wildlife (see original comment letter from Director Steinwand). Please consider enhancing the wildlife portions of the Low Pool and High Pool Management Strategies section, particularly under the Opportunities discussion.

In addition, we have included some additional suggestions for changes in wording to clarify or edit the 2<sup>nd</sup> draft (see attachments). Please consider these proposals for the final draft of the MP. If you need additional information, please contact me at 701-654-7475 ext. 28.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dan Halstead".

Dan Halstead  
Wildlife Resource Management Supervisor  
Riverdale Office

cc: Terry Steinwand, Director

Attachments



U.S. ARMY CORPS OF ENGINEERS (CORPS) RESPONSES TO COMMENTS  
ON THE DRAFT LAKE SAKAKAWEA MASTER PLAN/EA  
BY LETTER DATED AUGUST 27, 2007 WITH ATTACHMENTS  
FROM THE NORTH DAKOTA GAME AND FISH DEPARTMENT (NDGFD)

Paragraph 2 of the Letter, Referencing attached maps – The Corps' Lake Manager indicated that the boundaries on the GIS maps could not be changed in time for the Draft Master Plan/EA. He discussed these suggestions for changes with Dan Halstead of the NDGFD after the Draft Master Plan/EA was circulated for review. All but one request to change land classifications of specific areas to Wildlife Management (WM) to conform to the General Plan have been incorporated in the Master Plan/EA:

Whitetail Bay Ag. Leases – 2 western segments have become WM as requested;

Lewis & Clark Ag. Leases – 2 western segments have become WM as requested;

Williston South Ag. Leases – The eastern segment has become WM as requested;

Chris Creek Ag. Leases – The eastern portion has become WM as requested;

Hille near Dan Dinkins – Has become WM as requested, and is in Hille WMA;

East side of spillway – Remains Project Operations, with WM as a collateral use. Draft Chapter 8 recommended that if the Corps ever determines that a part or all of the area is not needed for Project Operations, it should be considered for reclassification to WM because it was included in the General Plan. In the Master Plan/EA, the fact that the Spillway East area was included in the 1983 General Plan was added to the Section 7.1 paragraph on Other Important Past Management Activities.

Paragraph 3 of the Letter – In the Low Pool and High Pool Management Issues and Strategies portion of Chapter 3, "Opportunities" discussed for each elevation zone include "Wildlife benefits". The suggested changes were not incorporated because the listing of potential measures to benefit wildlife in Chapter 3 is not all-inclusive. Other measures to improve wildlife would be considered in addition to those listed, as long as they are appropriate and practical.

Paragraph 4 of the Letter references attached comments from NDGFD staff. These attached comments and Corps responses are provided on the following pages.

In a separate transmittal, the Corps provided the NDGFD with responses to all the nongame biologist's comments and all other comments on the Preliminary Draft Master Plan/EA that were either not incorporated in the Draft Master Plan/EA or were addressed in a different part of the Draft Master Plan/EA than the location suggested in the comment.

## CORPS RESPONSES TO ATTACHED COMMENTS OF NONGAME BIOLOGIST

### Section 2.11.3. Mammals

- Consider adding moose to the large mammals.  
Response: “Moose” had been added in the Draft Master Plan/EA as suggested.
- The list of small mammals is not all-inclusive. Suggest adding verbiage such as: “Examples of small mammals common to this region...”  
Response: This suggested wording was used in the Master Plan/EA.
- Beaver should be moved from the small mammal paragraph and added to the furbearer paragraph.  
Response: “Beaver” was moved in the Master Plan/EA as suggested.
- Rename prairie dogs to black-tailed prairie dog (*Cynomys ludovicianus*). This is the only species of prairie dog in ND.  
Response: This was changed in the Master Plan/EA as suggested.
- Remove eastern spotted skunk from the furbearer paragraph as there are very few records of this species in ND, and those records are from the eastern part of the state.  
Response: This was removed in the Master Plan/EA as suggested.
- Add river otter to the furbearer paragraph. This species is likely present on the Missouri River tributaries.  
Response: River otters were not added because they are not likely present at the lake.

### Section 2.11.4.2.2. Terrestrial Non-game birds

- This list is not all-inclusive of all nongame birds which can be found in the project area. Suggest adding verbiage to the second sentence such as: “Examples of these species include...”  
Response: Although “include” does not mean “all-inclusive”, the wording was changed in the Master Plan/EA as suggested.
- Remove northern bobwhite – this species does not occur in ND, and is not non-game anyway.  
Response: This was removed in the Master Plan/EA as suggested.
- May want to consider re-naming this section to “Landbirds.” Birds in the United States are now more often categorized as 1 of 4 major groups: landbirds, shorebirds, waterbirds and waterfowl. See <http://www.nabci-us.org/> To be consistent with Joint Venture Plans, State Wildlife Action plans, other USFWS plans, etc., you may want to consider using the same classifications (also see Waterbird comments in next bullet)  
Response: “Terrestrial Birds” was changed to “Land Birds” in the Master Plan/EA as suggested.

### Section 2.11.4.3.1 Shorebirds

- The term “shorebird” does not typically include gulls and terns. More often gulls and terns are included under the category of “waterbirds.” Gulls and terns, Sections 2.11.4.3.3. (wading birds), and Section 2.11.4.3.4 (other water birds) could be combined into a Section titled “Waterbirds.” See

<http://www.fws.gov/birds/waterbirds/NPP/> and

<http://www.waterbirdconservation.org/> for more information on waterbirds.

Response: The section was retitled “Shorebirds, Gulls, and Terns” in the Master Plan/EA. Gulls and terns will remain in the same section as shorebirds because they all belong to the same family, Charadriiformes (<http://www.npwrc.usgs.gov/resource/birds/marshbrd/gulls.htm>).

- Rename “snipes” to Wilson’s snipe (this species name was recently changed from Common snipe to Wilson’s snipe).

Response: This was changed in the Master Plan/EA as suggested.

#### Section 2.11.4.3.3 Wading Birds

- Remove blue heron – I assume they meant Little Blue Heron; regardless, this species rarely occurs in ND.

Response: This was classified as “rare” on the Lake Sakakawea State Park Bird Species List and so was removed in the Master Plan/EA as suggested.

- Remove king rail – this species very rarely occurs in ND.

Response: This was not removed because it was classified as “common” on the Lake Sakakawea State Park Bird Species List.

#### Section 2.11.5.1. Amphibians

- Not all 10 amphibians are found within the project area, 8 are: plains spadefoot toad, Woodhouse’s toad, great plains toad, Canadian toad, Northern leopard frog, wood frog, Western chorus frog, and tiger salamander.

Response: This had been changed in the Draft Master Plan/EA as suggested.

- This section lists turtles as Amphibians when they are actually Reptiles. Remove common snapping turtle and painted turtle from this section.

Response: This had been changed in the Draft Master Plan/EA as suggested.

#### Section 2.11.5.2. Reptiles

- 11 reptile species may occur within the project area: short-horned lizard, Western painted turtle, smooth softshell turtle, common snapping turtle, common garter snake, plains garter snake, smooth green snake, western hognose snake, bullsnake, yellowbelly racer, and prairie rattlesnake. (Note: the sagebrush lizard may be included also, but they have only been found in the north unit of TRNP and south of there, not sure if this would be in the project area?)

Response: As suggested, “yellowbelly” was inserted before “racers”, and smooth softshell turtle was added to the list of species in the Master Plan/EA. Sagebrush lizards will remain, as the U.S. Geological Survey indicates their range includes portions of the upper Sakakawea area.

#### Section 2.12.4 Gray Wolf

- Gray wolves are no longer listed as federally threatened east of Hwy 83. They are under state management east of Hwy 83 and still listed as federally endangered west of Hwy 83. See May 2007 North Dakota Outdoors.

Response: The Master Plan/EA will contain a statement with wording such as “Gray wolves in the Western Great Lakes Distinct Population Segment (including

provides minimum power head and sediment storage capacity and assures minimum level for pump diversion of water from the reservoir.”

There should be some minimal pool level stated in the Master Plan/EA that truly protects water-based-recreation and fishery resources. (Received 8-16-07)

Response: The minimum operating pool is as stated in the response to the comment above. We are unable to state what minimum lake elevation would truly protect water-based recreation and fishery resources.

Section 7.25 omits the fact that there is no public access to the Lakeshore near East Totten Subdivision; public access should be obtained. (Received 8-16-07)

Response: The majority of recreation areas on Lake Sakakawea have guaranteed public access. A few areas do have access issues. The Corps investigates and attempts to negotiate a viable solution with adjacent landowners. However, the Corps has no influence on lands outside our project boundary.

If electric service becomes available, installation of a security light at 3-Mile Ramp in the Audubon Wildlife Management Area should be added as a development need in Section 7.8 to improve safety of boaters. (Received 8-16-07)

Response: The nearest electric service is 3 miles away; if electric service becomes available adjacent to the WMA at the boat ramp access road, installation of a security light would be considered by the ND Game and Fish Department.

In regard to development needs for Wildlife Management Areas (WMA) in Chapter 7, signage should be installed along access roads that identify the WMA and the distance from the sign to the WMA’s access point. (Received 8-16-07)

Response: Directional signs providing the name of the WMA are currently in place on roads leading off State highways. The mileage from the sign to the WMA varies by access route, because multiple access routes tend to branch from each major access road. These roads are usually county or township roads, and the ND Game and Fish Department has no jurisdiction to place signage in the rights-of-way. This issue may be appropriate to discuss at the Annual Stakeholder’s Meeting, which is open to the general public, because a solution would require multi-jurisdictional coordination.

The information of the functionality of boat ramps zone-by-zone in Chapter 3 is confusing. The commenter suggests that a summary table be compiled that includes all the areas and for each zone, which ramp(s) are usable at each area. (Received 8-16-07)

Response: A complete list of Lake Sakakawea boat ramps, including top and bottom elevations, was added to Section 3.3, Low Pool and High Pool Management Issues and Strategies, in the Master Plan/EA.

The Master Plan/EA should contain the criteria that need to be considered by marina developers prior to choosing a site for a new marina or expansion of facilities at an existing marina. (Received 8-16-07)

Response: Criteria for development of marinas and marina-related facilities has been added as new Section 2.19.10, and the old Section 2.19.10 is now Section 2.19.11.

North Dakota, east of U.S. Highway 83) are no longer protected by the Endangered Species Act. Instead, state and tribal laws dictate the level of gray wolf protection and management.”

#### CORPS RESPONSES TO ATTACHED COMMENTS OF OTHER NDGFD STAFF

Draft Page 2-39, Section 2.11.1.1, paragraph 1 – Smallmouth bass is listed as a warmwater species in the Master Plan/EA as suggested.

Draft Page 2-39, Section 2.11.1.1, paragraph 2 – The comment about cattle grazing on plants growing in the exposed lakebed during drought conditions was not addressed here, but rather in Chapter 3 of the Draft Master Plan/EA, each time “grazing opportunities” were discussed.

Draft Page 2-51, Section 2.11.4.3.2, paragraph 1 – Although the comment stated that the trumpeter swan was rare in central North Dakota, the project area is within the range of the trumpeter swan, so it remained in the list of species in the Master Plan/EA.

Draft Page 2-55, Section 2.11.6.4, end of paragraph 1 – As suggested, the Master Plan/EA includes “Insects are critically important to the diet of young upland gamebirds, thus the NDGFD does not allow the use of insecticides on WMA’s within the project.” Similar wording was also inserted in Sections 2.11.4.2.1 and 2.11.4.2.2.

Draft Page 2-79, Section 2.13.3, paragraph 1 – As suggested, the Master Plan/EA contains the words “and animals”; includes the distinction between ANS and introduced species that are beneficial or desirable; and identifies that reduced carrying capacity for native or desirable species results from reallocated energy flows.

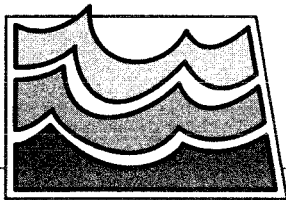
Draft Page 2-80, Section 2.13.3 – The comment that controls can also be applied to fauna, but would likely result in only limited success, as is the case for plants, was included in the Master Plan/EA.

Draft Page 2-84, Section 2.13.3.2.4 – As suggested, “Pesticides would eliminate both target and native/desirable fish species” was inserted in the Master Plan/EA.

Draft Page 7-115, Section 7.58, end of Development Needs – The comment to move the Corps-managed Deepwater Creek Recreation Area (RA) to an alternate location is premature. Several issues and problem exist at the current site. Therefore, relocation may be considered for future implementation, depending on available funding and possible land classifications changes. In the Master Plan/EA, no changes were made to Section 7.58, a statement was added to adjacent WMA (Section 7.57) that this site has reduced wildlife value due to disturbance cause by recreation, and included a Development Need that consideration should be given to improving the recreation facilities in the area.

Draft Page 7-250, Section 7.133, Little Missouri Grasslands Wildlife Area – The Little Missouri Grasslands Vegetative Management Area was changed to the Little Missouri Grasslands Wildlife Area for the Draft Master Plan/EA. It was brown (wildlife management) on the GIS sheets, and its 3,065.77 acres were included as wildlife management in Table 7.1. Due to an oversight, “vegetative management” appeared in the narrative of Section 7.133 of the Draft Master Plan/EA. This was changed to “wildlife management” in the Master Plan/EA.

Draft Page 7-268, Lakeshore Area near Weidner Cabin Site – The comment regarding the need to resolve ATV travel on the shoreline from the cabin site was not incorporated in the Draft Master Plan/EA based on advice from the Corps’ Lake Manager. However, this MU and writeup was deleted from the Master Plan/EA because this lakeshore area is actually part of the Hille WMA, MU 159. The Development Needs for the Hille WMA, in Section 7.142 of the Draft Master Plan/EA, already included control of vehicular access to the shorelines.



# North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850  
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

2007 AUG 17 AM 8: 50

August 13, 2007

Army Corps of Engineers, Omaha District  
Attention: District Commander  
106 South 15<sup>th</sup> Street  
Omaha, NE 68102-1618

Dear District Commander:

The purpose of this letter is to respond to the Corps' request for comments on the recently released Draft Garrison Dam/Lake Sakakawea Master Plan (Master Plan).

In our May 16, 2007, letter regarding the preliminary draft Master Plan, we provided a number of general comments that were not included in the re-write, such as contingency plans to address the loss of water supply intakes, an analysis of projected recreation demands/needs, and a prioritization of recommendations. We respectfully request that you reconsider those comments in your development of the final report.

As you are aware, the Office of the State Engineer and the State Water Commission believe that the development, maintenance, and protection of water supply intakes should be an important consideration in any planning scenario for Lake Sakakawea. Thus, it is encouraging to see that the Corps has included an inventory of community water supply intakes that draw water from the reservoir, and the elevations at which they anticipate potential problems from low water levels. However, if contingency planning efforts will not be included in the Master Plan as requested in our May 16, 2007, letter; it would be advantageous to at least include a discussion of the Corps' role in correcting problems with community water supply intakes when reservoir levels are at dangerously low elevations. This might include discussions about cost-sharing opportunities for modifications or the availability of technical assistance.

Under EOP #2 it is suggested, "The Master Plan/EA includes information regarding the issuing of intake permits through the Corps regulatory process and aiding municipal and rural systems to ensure functionality of intakes during drought conditions." But that information was not readily apparent, and in fact, seems to be absent all together with the exception of a brief discussion of Section 10 requirements under Public Law 90-483 (82 Stat. 731) on page 2-135.

On page 1-11, it is stated that 30,000 of the 493,000 project acres did not need to be purchased because they were part of the original "riverbed." Further explanation might be appropriate to outline the fact the those 30,000 riverbed acres were, and are, sovereign lands, which are owned and managed by the State of North Dakota, through the Office of the State Engineer (N.D.C.C. 61-33-05) and the State Land Department (N.D.C.C. 61-33-03).

As a general comment, the Office of the State Engineer and the State Water Commission applaud the development of the updated Garrison Dam/Lake Sakakawea Master Plan. Lake Sakakawea is one of North Dakota's most precious and valuable natural resources. As such, a new Master Plan that considers input from other agencies and members of the general public is long overdue.

We appreciate your consideration of the above comments, and thank you for the opportunity to comment on this important planning process.

Sincerely,

A handwritten signature in black ink, appearing to read "Dale L. Frink". The signature is fluid and cursive, with the first name "Dale" being more prominent.

Dale L. Frink, P.E.  
State Engineer



RESPONSES TO COMMENTS  
ON DRAFT GARRISON DAM/LAKE SAKAKAWEA MASTER PLAN/EA  
IN NORTH DAKOTA STATE WATER COMMISSION'S AUG. 17, 2007 LETTER

Paragraph 2, Contingency Plans – It is the responsibility of the owner and/or operator of the water supply intake to prepare drought contingency plans. However, cost sharing is available for Corps preparation of drought contingency plans for water supply intakes. Section 2.19.12 was added to the Master Plan/EA to explain these cost-sharing programs and is also referenced in Section 3.3.4.5, Municipal Intakes.

Paragraph 2, Analysis of Projected Recreation Demands/Needs – A recreation supply and demand analysis was prepared in Section 2.19 of the Master Plan/EA using reports, records, and data available from the Corps, U.S. Census Bureau, and State of North Dakota. The analysis demonstrated a need for all types of recreation facilities in each of the four State Planning Regions in which Lake Sakakawea is located. Criteria that need to be considered in location and development of marinas and marina-related facilities were added to the Master Plan/EA as Section 2.19.10.

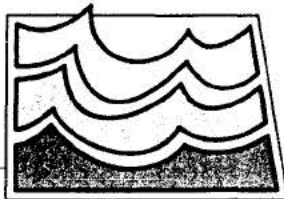
Paragraph 2, Prioritization of Recommendations – The Corps has deliberately not set priorities for the recommendations in Chapters 3 and 8. Setting priorities is one of the continuing functions of the Steering Committee, and of participants in the annual Stakeholders' Meeting, after the Master Plan/EA is approved. Priorities may change from year to year due to various factors, and not ranking the recommendations allows all interested stakeholders the maximum amount of flexibility for implementation.

Paragraph 3 – Information regarding Corps cost-sharing and technical assistance programs relevant to public water intakes and/or drought contingency planning have been added to the Master Plan/EA, as Section 2.19.12. Section 2.19.12 also summarizes the assistance the Corps has provided to the City of Parshall, ND in regard to its drought-affected water intake.

Paragraph 4, Aiding Municipal and Rural Systems to Ensure Functionality of Intakes during Drought Conditions – See the Paragraph 3 comment above.

Paragraph 4, Information Regarding Intake Permits – In order to clarify the intake permitting process, Section 2.23, explaining the Corps Regulatory Program, was added to the Master Plan/EA.

Paragraph 5 – The requested wording was inserted in Section 2.21.3 of the Master Plan/EA.



# North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850  
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

2007 SEP 17 AM 8:56

September 13, 2007

Army Corps of Engineers, Omaha District  
Attention: District Commander  
106 South 15<sup>th</sup> Street  
Omaha, NE 68102-1618

Dear District Commander:

The purpose of this letter is to provide an additional comment to our August 13, 2007 response regarding the recently released Draft Garrison Dam/Lake Sakakawea Master Plan (Master Plan).

Section 2.18.7, Estimated Economic Value to North Dakota of Lake Sakakawea's Walleye and Salmon, reports findings of a study completed by Dr. Steve Shultz and Dr. Randall Rosenberger. As you know, the general purpose was to capture estimated economic losses to North Dakota associated with walleye and salmon fishing as a result of declining water levels. What has come to our attention is that only direct expenditure losses were included in the report, and other losses associated with consumer surplus were not included.

It is our position that consumer surplus values are a legitimate means of deriving benefits anglers receive from their fishing experiences at Lake Sakakawea. When those experiences are compromised, as they have been because of declining water levels, it is only right to recognize the full brunt of those impacts. When direct expenditures are reported as the only losses to North Dakota associated with reduced expenditures of walleye and salmon anglers in 2003, only a fraction (\$933,000) of the total losses are reported. Had you used the adjusted and site-specific ND Game and Fish expenditure values and Lake Sakakawea-specific consumer surplus values that were estimated by Dr. Shultz and Dr. Rosenberger's travel cost model, the losses for 2003 total just over \$2.6 million.

As such, we respectfully request that the Corps at least report the total estimated losses of \$2.6 million, with an explanation or disclaimer of why the Corps does not typically recognize consumer surplus values; or leave Section 2.18.7 out of the report all together.

Sincerely,

Lee Klapprodt, Director  
Planning and Education Division

LK:pmf:ds/322

RESPONSE TO COMMENTS  
ON DRAFT GARRISON DAM/LAKE SAKAKAWEA MASTER PLAN/EA  
IN NORTH DAKOTA STATE WATER COMMISSION'S SEP. 17, 2007 LETTER

The North Dakota State Water Commission requested that the Garrison Dam/Lake Sakakawea Master Plan/EA include "consumer surplus" as a regional economic impact.

In accordance with U.S. Army Corps of Engineers (Corps) Engineer Regulation (ER) 1105-2-100, Planning Guidance Notebook, dated April 22, 2000, the Corps can consider two economic accounts in evaluating Federal actions, measures, or projects. These are the national economic development (NED) benefit account and the regional economic development (RED) benefit account. "Consumer surplus" measured by NED benefits reflects an increase in the net value of goods and services produced overall in the Nation. RED benefits reflect only an increase in regional economic activity. The latter, although a positive impact to the area economy, does not constitute an increase in the value of national production. In short, NED and RED values measure different benefits and should not be combined. That is why in Corps analyses they are tracked and considered in two different accounts.

A master plan is not required to include either NED or RED benefits. Information on economic consequences to the State of North Dakota of reductions in the salmon and walleye fisheries at Lake Sakakawea due to drought-induced changes in lake elevations was requested to be included in the Draft Lake Sakakawea Master Plan/EA by the North Dakota State Water Commission representative on the Steering Committee. This information was included in the Draft Lake Sakakawea Master Plan/EA to assist current and prospective concessionaires in evaluating business prospects in light of fluctuating lake elevations. RED reflects actual financial transactions affecting a region and as such is valuable information for a prospective concessionaire considering a business dependent on recreational visitation at Lake Sakakawea. Consumer surplus is an NED economic measure that does not reflect a regional financial transaction and accordingly is of little value to a prospective business owner or to governmental jurisdictions interested in tax revenues.

We believe that the presentation of regional economic activity as reflected in RED benefits at the different lake elevations examined is of value for the same reason it was originally incorporated in the Draft Lake Sakakawea Master Plan/EA. Therefore it has been retained in the Lake Sakakawea Master Plan/EA. We do not believe the presentation of consumer surplus would serve the same purpose. In addition, the consumer surplus data available identifies only the changes in consumer surplus in North Dakota without accounting for changes in consumer surplus in other states, as would be necessary for NED benefit evaluation. Accordingly, the discussion of regional changes in consumer surplus will not be included in the Lake Sakakawea Master Plan/EA.

-----Original Message-----

From: Norman Rice [mailto: [REDACTED]]

Sent: Tuesday, August 28, 2007 12:35 PM

To: Oldham, Maggie E NWO

Subject: Re: Paradise Point Association input into Army Corps of Engineers Master Manual

Dear Ms. Oldham,

I am currently President of the Paradise Point Association. Since our beginnings in 1972, we have worked cooperatively with the Army Corps of Engineers in all areas.

Since the beginnings of the drought in our area, we have faced severe difficulties in trying to maintain the Corps approved nine hole golf course in our community. With the receding water level in Lake Sakakawea, the Corps allowed us to dig a retention pond along a creek to allow us to water our course. But for the past three years we have been forced to close our golf course in July for the creek has dried up and the silt and deep mud along the shoreline of our community has precluded any of the normal fishing, swimming, boating and golfing activities we had grown accustomed to enjoying. Our course is public and at the rate of \$5.00 per nine hole round and \$8.00 for an entire day of golfing, we have provided a wonderful place for families to enjoy the sport without spending a fortune! Our boat launching area has been high and dry for years and we have removed all docks while maintaining the "sea walls" required by the Corps. We must now travel about 50 miles to launch our boats. Our beaches are unusable due to heavy silting and mud.

We have gone through the application process and are awaiting the reply from the State Water Board regarding the possibility of drilling test wells on Corps land across the bay from our property into the Hofflund Aquifer. Should that application be approved, we hope to have a constant source of water to maintain our course at great cost (up to \$200,000.00) to our homeowners.

We realize that all land owners in our area are suffering from the drought and all are working to find solutions to the continued low lake levels and resultant inability to withdraw needed water directly from the Lake.

We realize, also, that the low levels of water create myriad problems for the wildlife in our area. Deer struggle through the silt, to reach water and we have reports from our residents of deer trapped in the mud. My cousin's daughter waded a short way into the Lake and had to be pulled from the sucking silt.

I don't know what the solution is, but I do know that the quality of life in our community has severely decreased and, I'm sure, in other communities fronting the Lake they are experiencing similar problems.

We are not interested in taking over the management or ownership of the Corps land that fronts our property. With only 32 homes, most used only during the summers, we can not take on the legal responsibilities of such an arrangement. But we will continue to work cooperatively with the Corps to try to find solutions to our serious problems.

We sincerely hope that the Master Plan will take into account our community's problems and those of other small communities and commercial enterprises along the Lake and we look forward to your response.

Sincerely,

Linda M. Rice, President  
Paradise Point Association

[REDACTED]

Williston, North Dakota 58802

Home Phone: [REDACTED]

CORPS RESPONSE TO COMMENTS FROM LINDA RICE,  
PRESIDENT, PARADISE POINT ASSOCIATION

The information provided on the pursuit of a more reliable supply of irrigation water for the Paradise Point Golf Course was included in Section 7.86, which describes Management Unit (MU) 93, Paradise Point Golf Course. Soggy soil (substrate) is one of the hazards of fluctuating water levels. As a result, wildlife may get stuck in the muck; we are very glad someone was nearby to rescue your cousin's daughter. We all hope that the drought ends soon and the lake levels rise, so that you can launch your boats without traveling such great distances. We anticipate that implementation of the Low Pool and High Pool Management Issues and Strategies in Chapter 3 of the Master Plan/EA will reduce the severity of drought impacts in future years. In the meantime, areas designated for vehicular and/or pedestrian shoreline access based on the Shoreline Access Policy are periodically updated as conditions change, and the Shoreline Access Policy and Lake Sakakawea areas designated for shoreline access are available at the Web site: [http://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/shorelineAccessPolicy.pdf](http://www.nwo.usace.army.mil/html/Lake_Proj/garrison/shorelineAccessPolicy.pdf).





# United States Department of the Interior

## BUREAU OF RECLAMATION

Dakotas Area Office  
P.O. Box 1017  
Bismarck, North Dakota 58502



DK-400

**OCT 31 2007**

Colonel David C. Press  
District Commander  
Department of the Army  
Corps of Engineers, Omaha District  
106 South 15<sup>th</sup> Street  
Omaha NE 68102-1618

Subject: Garrison Dam/Lake Sakakawea Master Plan

Dear Colonel Press:

Thank you for the invitation to comment on the Garrison Dam/Lake Sakakawea Master Plan. We have the following comments on Section 7.27. Snake Creek Pumping Station; Management Unit (MU): 029. Our comments are as follows:

- ✓ Under the write-up for "Vegetation," delete the following sentences: "Wetland basins with dikes are within the National Wildlife Refuge on Lake Audubon. The wetlands were created by Bureau of Reclamation as part of the Garrison Diversion Unit Project for Refuge mitigation." The wetlands referred to here are not part of the Snake Creek Pumping Plant MU.
- ✓ Under the write-up for "Resource Objectives," it reads, "Operate the pumping plant and manage Lake Sakakawea surface elevations ....." Replace Lake Sakakawea in this sentence with Lake Audubon.
- ✓ Under the write-up for "Resource Objectives," delete the following sentence, "Provide appropriate stabilization measures on Lake Audubon." This is not part of the Snake Creek Pumping Plant MU.
- ✓ Under the write-up for "Development Needs," delete the following sentence, "Enhance the quality of the wetlands created by the Bureau of Reclamation on the National Wildlife Refuge for resident and migratory species." This is not part of the Snake Creek Pumping Plant MU.

If you have any questions regarding our comments, please contact Mike Marohl at 701-221-1259.

Sincerely,

  
For **Dennis E. Breitzman**  
Area Manager

U.S. ARMY CORPS OF ENGINEERS (CORPS) RESPONSES TO COMMENTS  
ON THE DRAFT LAKE SAKAKAWEA MASTER PLAN/EA  
BY LETTER DATED AUGUST 27, 2007 WITH ATTACHMENTS  
FROM THE NORTH DAKOTA GAME AND FISH DEPARTMENT (NDGFD)

Section 7.27 MU 29

- Vegetation comment – deleted
- Resource Objective – deleted Sakakawea and replaced with Audubon
- Resource Objectives – deleted
- Development Needs - deleted



**STATE  
HISTORICAL  
SOCIETY**  
OF NORTH DAKOTA

John Hoeven  
Governor of North Dakota

August 2, 2007

North Dakota  
State Historical Board

Marvin L. Kaiser  
Williston - President

Albert I. Berger  
Grand Forks - Vice President

Chester E. Nelson, Jr.  
Bismarck - Secretary

Gerold Gemtholz  
Valley City

A. Ruric Todd III  
Jamestown

Diane K. Larson  
Bismarck

Richard Kloubec  
Fargo

Sara Otte Coleman  
Director  
Tourism Division

Kelly Schmidt  
State Treasurer

Alvin A. Jaeger  
Secretary of State

Douglass Prchal  
Director  
Parks and Recreation  
Department

Francis Ziegler  
Director  
Department of Transportation

Merlan E. Paaverud, Jr.  
Director

Julie A. Price  
Garrison Master Plan Program Manager  
Corps of Engineers, Omaha District  
106 South 15<sup>th</sup> Street  
Omaha, NE 68102-4978

**ND SHPO Ref.: 05-0374 and 90-0208, COE Garrison Dam/Lake Sakakawea  
Master Plan and Integrated Environmental Assessment  
ATTN: CENWO-PM-AE (Price)**

Dear Ms. Price:

We have received and reviewed draft: "Garrison Dam/Lake Sakakawea Master Plan and Integrated Environmental Assessment (July 20, 2007)."

Cultural resource protocols outlined in Sections 2.17.2 and 2.17.3 are to coordinated with the "Medium-Development Alternative," as discussed in the plan (Sections 6.3.3 and 6.3.5.3). We look forward to continued consultation on cultural resource matters as the plan is finalized and implemented.

Thank you for the opportunity to review the project. If you have questions please contact either Paul Picha (701) 328-3574 or Fern Swenson at (701) 328-3575.

Sincerely,

Merlan E. Paaverud, Jr.  
State Historic Preservation Officer (North Dakota)  
and  
Director, State Historical Society of North Dakota

Accredited by the  
American Association  
of Museums



24 SEP 2007



# North Dakota Department of Transportation

Francis G. Ziegler, P.E.  
*Director*

John Hoeven  
*Governor*

August 20, 2007

David C. Press  
Colonel, Corps of Engineers  
District Commander  
106 S. 15<sup>th</sup> Street  
Omaha, NE 68102-1618

GARRISON DAM/LAKE SAKAKAWEA MASTER PLAN PROVIDES LAND  
MANAGEMENT VISION FOR THE GARRISON PROJECT, MOUNTRAIL, MCLEAN,  
DUNN, MCKENZIE, MERCER, AND WARD COUNTIES, NORTH DAKOTA

We have reviewed your July 20, 2007, report.

Based on the information provided in this report, the above referenced project will have no adverse effect on the North Dakota Department of Transportation highways. However, if any changes are made to this report or project a new request would be need to be submitted for review and comment.

Additionally, if any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, and Walter Peterson at 701-774-2700, Paul Regan at 701-837-7625, and Larry Gangl at 701-227-6510.

A handwritten signature in black ink, appearing to read "Ronald J. Henke".

RONALD J. HENKE, P.E., DIRECTOR – OFFICE OF PROJECT DEVELOPMENT

57: rjh:js

c: Paul Regan, Minot District Engineer  
Walt Peterson, Williston District Engineer  
Larry Gangl, Dickinson District Engineer



*Preserving America's Heritage*

August 30, 2007

Ms. Julie Price  
Garrison Master Plan Project Manager  
Omaha District  
U. S. Army Corps Of Engineers  
106 South 15<sup>th</sup> St.  
Omaha, NE 68102-1618

REF: Update of Garrison Dam/Sakakawea Master Plan, North Dakota

Dear Ms. Price:

We appreciate receiving a copy of the proposed update of the Garrison Dam/Sakakawea Master Plan, and request for comments on it. It appears to us that the Cultural Resources Management Plan (Appendix F) represents a comprehensive approach to management of historic properties and cultural resources, and completion of the nine tasks identified as remaining will assist the Corps in meeting its responsibilities under the National Historic Preservation Act.

We appreciate the opportunity to comment on this proposed update, and look forward to continuing to work with your office. If you have any questions, do not hesitate to call Dr. Tom McCulloch at 202-606-8554 (or be e-mail to [tmcculloch@achp.gov](mailto:tmcculloch@achp.gov)).

Sincerely,

Reid J. Nelson  
Assistant Director  
Federal Property Management Section  
Office of Federal Agency Programs

13 AUG 2007

**NORTHERN CHEYENNE TRIBE  
TRIBAL HISTORICAL PRESERVATION OFFICE**

P.O. Box 128  
Lame Deer, Montana 59043  
(406)477-6284  
Fax(406)477-6210

**Native American Consultation Response Form**

**From:** Northern Cheyenne Tribe

**Re:** Consultation

Site Name:	Garrison Master Plan
TCNS Notification ID Number:	
TCNS Filing/Notification Date:	
Site Address:	Dept. Of The Army Corps Of Engineers 106 South 15th Street Omaha, NE 68102-1618

**Response:**

- ☒ We have no comments related to proposed project.
- ☐ Will have no effect on tribal religious or sacred sites.
- ☐ May affect tribal religious or sacred site; please notify if cultural resources are found during site investigation/construction.
- ☐ Other(please specify) \_\_\_\_\_

**Exception:** If archaeological materials or human remains are encountered during construction, the State Historic Preservation Office and applicable Native American Tribes will be notified.

[Signature]  
Signature  
CONESO FISHER  
Printed Name

8/2/07  
Date  
\_\_\_\_\_  
Telephone No.

RESPONSES TO COMMENTS RECEIVED ON THE DRAFT GARRISON  
DAM/LAKE SAKAKAWEA MASTER PLAN/EA AT PUBLIC WORKSHOPS,  
AUGUST 13-16, 2007

Chapter 1 should include more information on hardships suffered by non-Indians whose land was acquired by the Federal Government for the Garrison Project. (Received 8-13-07)

Response: More information on hardships suffered by both Indians and non-Indians was included in earlier versions of Chapter 1, and the Steering Committee guided the version provided in the Draft Master Plan/EA. References are provided for interested readers to obtain additional information about these hardships.

The Stormwater Act, a federal law, should be included in the environmental laws section of Chapter 2. (Received 8-13-07)

Response: No Stormwater Act has been found among federal laws and regulations. Under the Clean Water Act, storm water issues are addressed through the National Pollutant Discharge Elimination System (NPDES) permit process.

It should be stated in Chapter 2 that problems of gully erosion and sedimentation are worse when lake levels are low. (Received 8-13-07)

Response: In section 2.8.1, the following sentence was added: "Erosion further increases when sparsely vegetated areas normally under water are exposed during drought-induced low lake levels."

The Master Plan/EA should provide information on the projected life of Lake Sakakawea. (Received 8-13-07)

Response: Appendix B, Pertinent Data, states at the bottom of page B-2 that the expected life of the reservoir after Garrison Dam was closed was 920 years. This estimate is based on an analysis updated in January 2007.

The Master Plan/EA should include the effects that municipal, rural, and industrial water supply diversions to northeast North Dakota will have on pool levels in Lake Sakakawea. (Received 8-13-07)

Response: Because sedimentation will occupy additional storage over the years, resulting in higher pool levels for any given storage volume, and because the diversions to northeast North Dakota comprise only a small fraction of total diversions (which are expected to increase as the population grows over the years), the diversions would reduce the levels of Lake Sakakawea by only about 1 foot during a drought similar to the drought of the 1930s (USACE, Northwestern Division, Missouri River Basin Water Management Division, Red River Valley Water Supply Project: Analysis of Missouri River Effects, June 2007). This information has been provided in Chapter 1 of the Master Plan/EA, as suggested.

What effect would the proposed land transfer, if approved, have on the Master Plan/EA? (Received 8-13-07, 8-14-07, and 8-15-07)

Response: If the land transfer is approved prior to approval of the Master Plan/EA, any tables or narrative affected by the land transfer will be updated; Section 7.55 (Vegetative Management Areas within the Fort Berthold Reservation) will be deleted.

One commenter agreed with the Master Plan/EA highlighting noxious weeds as a big problem, especially in times of drought. (Received 8-14-07)

Response: Comment noted. Noxious weeds were covered in great detail in this Master Plan/EA because control of noxious weeds has become a very important issue.

The Draft Master Plan/EA does not provide for maintaining water quality and functionality of municipal water intakes, but only recommends that contingency plans be developed. Who is responsible for preparing the contingency plans? (Received 8-14-07)

Response: The owners/operators of the intakes are responsible for preparing the contingency plans. Corps cost-sharing programs are available for preparation of drought contingency plans, as detailed in Section 2.19.12 of the Master Plan/EA.

Section 7.136 should address the jurisdictional law enforcement issues at Charging Eagle Recreation Area that results in vandals going unpunished. (Received 8-14-07)

Response: Prosecution of violations has historically been problematic in this area. The Cultural Resources Management Plan references the Code of Federal Regulations (CFR) Enforcement Authority and identifies the jurisdiction of Corps park rangers. Violations outside of Corps park rangers' authority should be submitted to the proper authorities.

The ND Game and Fish Department would like to exchange management responsibilities with the Corps: to give up management of part of Deepwater Creek Wildlife Management Area that has lake access during low pool levels and high camping visitation and assume management of the Deepwater Creek Recreation Area, currently managed by the Corps, for wildlife management. (Received 8-14-07)

Response: Information was added to the Deepwater Creek Wildlife Management Area (WMA) writeup in Chapter 7 of the Master Plan/EA that provides a rationale for converting the land classification of a portion of the WMA from wildlife management to recreation.

The area identified in the Draft Master Plan/EA as Management Unit 160 and mapped on Sheet 6 is not a Corps-managed low-density recreation area; it is part of the Hille Wildlife Management Area, managed by the ND Game and Fish Department. (Received 8-14-07)

Response: In the Master Plan/EA, the area previously shown as MU 160, a low-density recreation area, is now part of the Hille Wildlife Management Area, and the Lake Sakakawea Islands Wildlife Area, previously MU 184, is now MU 160.

Some boundaries of management units in Appendix A of the Draft Master Plan/EA are not consistent with the boundaries of wildlife management areas identified in the 1983 General Plan. (Received 8-14-07)

Response: Boundaries of several management units have been readjusted accordingly in the Master Plan/EA.

Fish cleaning facilities at Pouch Point Recreation Area need to be upgraded; currently disposal occurs in excavated pits. (Received 8-14-07)

Response: In the Master Plan/EA, the development need for a fish cleaning station at the Pouch Point Recreation Area was changed to “Add a fish cleaning station with upgraded disposal facilities,” as suggested.

Silting in the Little Missouri Arm, which combined with low water levels resulted in the closure of the Little Missouri RA, needs to be identified as a problem in the Master Plan.

Response: Section 2.8.2 of the Draft Master Plan/EA stated that 20 percent of the sediment deposited in Lake Sakakawea has occurred in the Little Missouri Arm and that sediment has resulted in conversion of open water to mudflats at the upper ends of bays and along shorelines. In the Master Plan/EA, a sentence in Section 7.135 was expanded to read “Silt deposition is occurring in the Little Missouri Arm near the MU and has converted open water to mudflats; this situation is worsened by drought-influenced low lake elevations.”

Section 2.13.2 should mention the recently created Three Affiliated Tribes (TAT) Weed Board and the County Weed Boards. All the Weed Boards are working tirelessly to control noxious weeds, which spread more easily during conditions of drought and low pool levels. Although leafy spurge and salt cedar are the most prevalent noxious weeds on the Reservation, Canada thistle has greatly increased during the drought. In addition, additional noxious weed species such as hounds tongue and yellow star thistle are increasing. (Received 8-14-07)

Response: All weeds mentioned above are discussed in the Draft Master Plan/EA. Information on the efforts of the Weed Boards was added to Section 2.13.2 of the Master Plan/EA.

The statement in Section 2.11.1.2 of the Master Plan regarding the low likelihood of further development of recreation facilities in the Headwaters area is not consistent with the many development needs identified for most of the recreation areas in this region in Chapter 7 of the Master Plan. (Received 8-15-07)

Response: This statement has been removed from the Master Plan/EA.

The proposed low-density recreation area on the north side of Little Knife Bay is greatly needed; the commenter wanted to be able to camp at Little Knife Bay again. (Received 8-15-07)

Response: Comment noted. Family primitive camping is one of the recreational uses expected at this new low-density recreation area.

Although the receding shoreline made vehicular access to the shore more difficult, one commenter liked to hike, and the low lake levels provided more area for him to walk along the shore in solitude. (Received 8-15-07)

Response: Comment noted. We are glad the commenter is enjoying recreation at the lake even under drought conditions.

The Master Plan/EA and Shoreline Access Policy should provide for more areas where vehicles could be driven to the shore, because low pool levels have resulted in the shoreline receding 2 miles in places, and it is difficult for some retirees to walk that far. (Received 8-15-07)

Response: The Corps meets regularly with stakeholders to identify access needs and investigate potential areas for Shoreline Access. Determining factors for acceptable access areas include topography, substrate, critical habitat, Threatened and Endangered Species activity, and cultural resources. A discussion of the Shoreline Access Policy has been added to Section 2.2.4 in the Master Plan/EA. The Shoreline Access Policy and list of areas designated for vehicular and/or pedestrian shoreline access are provided at the Web site:

[http://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/shorelineAccessPolicy.pdf](http://www.nwo.usace.army.mil/html/Lake_Proj/garrison/shorelineAccessPolicy.pdf).

The Master Plan/EA and Shoreline Access Policy should provide for more all-terrain vehicle (ATV) access to the shore for shoreline fishing. (Received 8-15-07)

Response: See the response to the comment above.

The narrative in Section 7.84 of the Master Plan/EA needs to be updated in regard to the trail. Thistles and tumbleweeds along White Tail Bay in areas that used to be inundated make it difficult to walk towards the receding shoreline; the Legacy Trail used to be enjoyable to walk but it is now overgrown with weeds. (Received 8-15-07)

Response: The Draft Master Plan/EA addresses weed control in terms of project-wide objectives. In Chapter 7, resource objectives and development needs address weed control for all individual management units (MU's).

The narrative in Section 7.86 of the Master Plan/EA needs to be updated. Paradise Point Golf Course had to close due to lack of water; the mudflats were too soggy to install a pump so that water could be obtained by extending the water line. Deer have sunk in this "quicksand" also. (Received 8-15-07)

Response: The President of the Paradise Point Association stated in an emailed comment that the Association had applied to the ND State Water Commission for a permit to drill test wells into the Hofflund Aquifer on Corps-managed lands across Whitetail Bay from the golf course. The inadequacy of irrigation water and its consequences have been added to the writeup on Paradise Point Golf Course in Chapter 7 of the preliminary final Master Plan/EA. Soggy soil ("substrate") is one of the hazards of fluctuating pool elevations. The soggy mudflats are one reason this area was not included on the list of shoreline access points that was prepared, and is continually updated, according to the Shoreline Access Policy. The Shoreline Access Policy is available at the Web site:

[http://www.nwo.usace.army.mil/html/Lake\\_Proj/garrison/shorelineAccessPolicy.pdf](http://www.nwo.usace.army.mil/html/Lake_Proj/garrison/shorelineAccessPolicy.pdf).

The Master Plan/EA should mention that ice fishing in the upper part of Lake Sakakawea is restricted or non-existent during times of low pool levels because the near-shore area is too shallow for good fishing. (Received 8-15-07)

Response: This wording was added to Section 2.1.2 of the Master Plan/EA.

The Master Plan/EA should assure that there will be public access to all recreation areas. (Received 8-15-07)

Response: The majority of recreation areas on Lake Sakakawea have guaranteed public access. A few areas do have access issues. The Corps investigates and attempts to negotiate a viable solution with adjacent landowners. However, the Corps has no influence on lands outside our project boundary.

The Master Plan/EA should ensure that low-water boat ramp access to Lake Sakakawea is continued. (Received 8-15-07)

Response: Needs are identified in Section 3.3, Low Pool and High Pool Management Issues and Strategies. The Corps and its land-managing partners put forth their best coordinated effort to meet public needs for lake access.

The Master Plan/EA should provide for more control of leafy spurge and other noxious weeds. (Received 8-15-07)

Response: The Draft Master Plan/EA addressed weed control in terms of project-wide objectives. In Chapter 7 of the Draft Master Plan/EA, resource objectives and development needs addressed weed control for all individual management units (MU's).

In Section 1.3, information regarding Sakakawea needs to be revised. The commenter, a Three Affiliated Tribes staff member, stated she would provide written comments on specific revisions. (Received 8-15-07)

Response: At the time the Preliminary Final Master Plan/EA was prepared, the Three Affiliated Tribes' information on Sakakawea was not available because the Web site: [www.mhanation.com](http://www.mhanation.com) Tourism – Sakakawea section was “under construction”. Revisions will be considered for the Final Master Plan/EA when this information is available from the Three Affiliated Tribes.

More hiking trails are needed in the Van Hook Arm, and the process for their development needs to be speeded up. (Received 8-15-07)

Response: Development needs for specific facilities at the Parshall Bay and Van Hook recreation areas were provided to the Corps by the managing agency, the Mountrail County Park Board. Similarly, the Three Affiliated Tribes provided development needs for the Pouch Point Recreation Area, which it manages. Neither of these managing agencies made any comments to revise the development needs listed for any of these three recreation areas in Chapter 7 of the Draft Master Plan/EA. However, development of trails would be included under a development need that is listed for all three recreation areas in Chapter 7, “Provide additional facilities if needed to meet public demand.”

Boat storage facilities and a fishing pier should be added to the development needs for the Parshall Bay Recreation Area in Section 7.61. (Received 8-15-07)



Response: Development needs for specific facilities at the Parshall Bay Recreation Area were provided to the Corps by the managing agency, the Mountrail County Park Board, which has made no comments to revise the Draft Master Plan/EA in this regard. However, development of boat storage facilities and a fishing pier would be included under the existing development need “Provide additional facilities if needed to meet public demand.”

A walking trail, boat storage facilities, and a fishing pier should be added to the development needs for the Van Hook Recreation Area in Section 7.62; the commenter felt that rental cabins are also greatly needed. (Received 8-15-07)

Response: Rental cabins were included in the development needs for the Van Hook Recreation Area in the Draft Master Plan/EA. Development needs for specific facilities at the Van Hook Recreation Area were provided to the Corps by the managing agency, the Mountrail County Park Board, which has made no comments to revise the Draft Master Plan/EA in this regard. However, development of a trail, boat storage facilities, and a fishing pier would be included under the existing development need “Provide additional facilities if needed to meet public demand.”

Several persons living near and using the Parshall Bay and Van Hook recreation areas (RA) felt that visitation was greater at Van Hook RA than at Parshall Bay RA, the opposite of what was reported in Sections 7.61 and 7.62. (Received 8-15-07)

Response: In 2001 the traffic counter at Van Hook RA was relocated and counted traffic only in one direction instead of in both directions. Visitation to the Van Hook RA during the years 2001 through 2006 was actually twice what appeared in the Draft Master Plan. Tables 2.19.1 and 2.19.2 and the visitation table in Section 7.62 have been revised accordingly.

A commenter requested that the land classification of a newly proposed low-density recreation area be changed to a more protective classification because the area contains a cultural resources site that has experienced looting. (Received 8-15-07)

Response: The process of reviewing and approving development plans, and adherence to cultural resources guidelines during construction, will ensure protection for all known cultural resources that either are eligible for the National Register of Historic Places or have not been evaluated yet.

The statement in Section 2.7.2 that a lake elevation of 1775 feet above mean sea level (msl) “serves as a minimum pool for recreation, fish and wildlife” is misleading. Lake Sakakawea water levels have been considerably above 1775 feet msl during the current drought and yet have greatly impacted fish habitat, the lake fishery, and boat access to Lake Sakakawea. (Received 8-16-07)

Response: The statement referred to in Section 2.7.2 is similar to the language as it appears in the Missouri River Master Water Control Manual Review and Update (“Master Manual”) and the Missouri River Main Stem Reservoir System – Reservoir Regulation Manual – Garrison Manual and also includes “provides for minimum power head.” The statement has been changed in the Master Plan/EA to read “This zone

**APPENDIX F**

**CULTURAL RESOURCES MANAGEMENT PLAN  
AND PROGRAMMATIC AGREEMENT**

**CULTURAL RESOURCES  
MANAGEMENT PLAN  
FOR LAKE SAKAKAWEA PROJECT AREA  
Volume I**

Prepared for  
**U.S. ARMY CORPS OF ENGINEERS,  
OMAHA DISTRICT**

**CONTRACT NO.  
DACW45-03-P-0130**

**Project Number  
33048**

**April 2006**

**Elgin Crows Breast, Project Director  
Pemina Yellow Bird, Co- Principal Investigator  
Mark Latham, Burns & McDonnell, Co- Principal Investigator  
Calvin Grinnell, Resource Specialist**

**CULTURAL RESOURCES  
MANAGEMENT PLAN  
FOR LAKE SAKAKAWEA PROJECT AREA  
Volume II - Tables, Appendices**

Prepared for  
**U.S. ARMY CORPS OF ENGINEERS,  
OMAHA DISTRICT**

**CONTRACT NO.  
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**Project Number  
33048**

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Calvin Grinnell, Resource Specialist**

**CULTURAL RESOURCES  
MANAGEMENT PLAN  
FOR LAKE SAKAKAWEA PROJECT AREA  
Volume III - Maps**

Prepared for  
**U.S. ARMY CORPS OF ENGINEERS,  
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## I. EXECUTIVE SUMMARY

In accordance with Federal legislation, and as stated in U.S. Army Corps of Engineers (Corps) Regulation 1130-2-438(6a), it is the policy of the Chief of Engineers to *identify, evaluate, protect, preserve, and manage historic properties located on Civil Works Water Resource project lands*. Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended, directs Federal agencies to establish a historic preservation program for properties under their jurisdiction, and requires Federal agencies to integrate historic preservation concerns into agency plans and programs. Specifically, it calls for agencies to inventory lands under their protection for historic properties, to evaluate these properties for local, state, or national historical significance, and to nominate significant properties to the National Register of Historic Places (NRHP). Section 110 further stipulates that steps be taken to protect historic properties from destruction as a result of agency activities.

The Cultural Resources Management Plan (CRMP) for the Lake Sakakawea Project Area was developed by the U.S. Army Corps of Engineers, Omaha District, and Affected Tribes (as identified below) in response to a Federal mandate requiring a historic preservation program for Corps civil works projects. As the Lake Sakakawea project area is within the contemporary exterior boundaries of the Fort Berthold Reservation, the Mandan, Hidatsa and Arikara Nation maintains a vested interest in the management of the cultural resources. In addition, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Turtle Mountain Band of Chippewa, the Crow Nation and the Ft. Peck Sioux Tribe also maintain an interest in the cultural resources, because significant sites within and around the project may be affiliated with these Nations. However any Indian Tribe, as defined in the 2004 Final Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for compliance with the National Historic Preservation Act, as amended (Appendix C)(hereinafter, 2004 PA), that attaches religious and cultural significance to cultural resources, including historic properties, as provided in the scope of this CRMP, regardless of the location or nature of the undertaking or regardless of whether the Tribe has been or will be developing any other agreements, is included in this CRMP. All of these Tribes are referred to henceforth as the Affected Tribes of this CRMP for the Lake Sakakawea project area.

In addition, the 2004 PA is an umbrella document for this CRMP. The Action Items listed in Section V of this CRMP support the requirements of the 2004 PA which was collaboratively developed by the Corps, the Affected Tribes, ACHP, THPOs, SHPOs and other interested parties. While every attempt has been made to avoid conflicts between this CRMP and the 2004 PA, if there should be any conflicts, the requirements in the 2004 PA will be followed until the discrepancy can be resolved.

The Tribes expect the Corps to manage lands under its jurisdiction in a manner consistent with the Federal trust responsibility to Indian Tribes. The Corps acknowledges that the trust responsibility includes legal responsibilities and obligations to provide the highest standards of fiduciary care with respect to Federal and other activities that may affect the lands, other trust resources, and the exercise of the powers and rights of Indian nations.

The Tribes expect the Corps to exercise genuine stewardship with respect to places that hold sacred and cultural importance for the Tribes and to share the stewardship of these special places

with the Tribes. Whether this is called “shared stewardship” or “cooperative management” or some other term, it is expected that the relationship that develops between the Corps and the Tribes will be mutually respectful and cooperative, with the ultimate objective of protecting these sacred and culturally important places and assuring access for spiritual and cultural activities.

This CRMP is for the entire Garrison Dam/Lake Sakakawea project area which is defined as a 178-mile stretch of the main stem of the Missouri River from near Williston, North Dakota to near Garrison, North Dakota. Approximately 1,320 miles of shoreline are found within this project area, which includes 177 management units.

## **A. SUMMARY OF COMPLIANCE WORK**

1. Twelve large-scale cultural resource surveys have been conducted in the Lake Sakakawea/Garrison Dam project area (See Overview, Section E). Five archaeological districts were defined as a result of these investigations, with the strong possibility of more being defined as new surveys are conducted. Existing surveys are listed and briefly described in Table A, and are discussed more fully in Chapter III, Section E.
  2. Several small-scale cultural resource surveys have been conducted throughout the lake project, before and after the large, comprehensive surveys. These surveys are listed and briefly described in Table A. The actual acreage surveyed is unknown for most of these small projects, as this information was not documented.
3. A total of 1,511 sites and 481 isolated finds are known to exist in the project area, including 1,493 archaeological sites and 18 historic architectural sites. Of these sites, none are either listed on the NRHP or are classified as a contributing part of a National Register District. Additionally, 17 sites are considered eligible for the NRHP and 1,244 sites are unevaluated against the NRHP criteria. A total of 242 sites have been determined not eligible.
4. Data recovery and mitigation of portions of some NRHP listed sites have been undertaken. Most of these investigations were conducted by the River Basin Survey Project, but some smaller scale data recovery and mitigation projects have taken place. Some sites have been stabilized or partially stabilized, including Crow Flies High and Nishu Bay.

## **B. ACTION PLAN:**

The remaining cultural resource tasks at Lake Sakakawea are:

### **1. Task 1 – Survey of Historic Properties Including Traditional Cultural Properties**

Many of the cultural resource surveys undertaken for Lake Sakakawea have been carried out with little or no tribal input. Future cultural resource surveys need to encourage and employ the active participation of tribal members for the file and literature search, native oral history and traditional cultural property information, fieldwork, lab



work, and report preparation. Any intensive, 100 percent, cultural resource inventory of the shoreline making up Corps lands on Lake Sakakawea would require a formidable effort and expense. Clearly, such an undertaking would require a long-term commitment entailing a number of native and non-native personnel, field seasons, and reports chronicling the results of such a significant study. This inventory data would be used in conjunction with previously collected oral history and contemporary testimony gathered during the TCP surveys. Further consultation with the Affected tribes may develop the strategy (i.e., research design) for designing, funding, and executing such a multi-year project employing native and non-native personnel.

In the case of TCP evaluations, these studies shall be carried out by the Mandan, Hidatsa, and Arikara Nation in consultation with Affected Tribes, THPO/SHPO and ACHP, and/or Tribal Archeologists. Except for TCP surveys, guidelines and qualification requirements for conducting such investigations are found in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register/Vol. 48, No. 190, Thursday, September 29, 1983), and Guidelines for Archaeological Investigations prepared by the North Dakota SHPO. Information from this step will provide criteria in developing the overall priorities for future protective measures on sites.

## **2. Task 2 – Testing and Evaluation of Historic and Cultural Properties**

The evaluation of sites identified in earlier studies as eligible, potentially eligible or unevaluated will be completed to determine if these sites are eligible for the NRHP and to assess damage. The evaluation may only include extremely limited excavation to determine site boundaries and must be coordinated with the Affected Tribes. Other forms of evaluation may be substituted for subsurface testing at the request of the Affected Tribes and/or THPO/SHPO. With the exception of Traditional Cultural Properties (TCPs), which will be identified by the Cultural Preservation Office of the Mandan, Hidatsa and Arikara Nation in consultation with other Affected Tribes, these investigations will be conducted by a qualified archaeologist in consultation with the Affected Tribes, THPO/SHPO, the ACHP, and other interested parties. The stipulations in the 2004 PA (Appendix C) provide detail on how consultation will be conducted for purposes of compliance with this CRMP.

Guidelines and qualification requirements for conducting such investigations are found in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register/Vol. 48, No. 190, Thursday, September 29, 1983), and Guidelines for Archaeological Investigations prepared by the North Dakota SHPO. Information from this step will provide criteria for developing the overall priorities for future protective measures on sites. A total of 1,244 sites considered unevaluated against the NRHP criteria of significance and requiring additional surveys are listed in tables in Section V: Action Plan.

## **3. Task 3 - Nominate Sites for Listing to the National Register of Historic Places**

Any cultural resources on Lake Sakakawea property found to be of cultural or spiritual significance to Affected Tribes or have been found significant to the understanding of the history or prehistory of the area must be nominated for listing to the NRHP. No sites have, individually or as a contributing part of an archaeological district, been nominated to the NRHP. Yet, 17 sites are considered eligible and should be nominated to the NRHP. The sites to be nominated are listed in tables in Section V: Action Plan. More sites from the list for Task 1 may be added to this list, if determined eligible after Task 1 sites have been evaluated.

#### **4. Task 4 - Site Monitoring and Enforcement.**

District personnel, Tribal contractors and other appropriate personnel who patrol the Project Lands (BIA, state and Tribal law enforcement officers, and federal, state and tribal Game & Fish officers) will monitor various threats to the integrity to cultural resources on a routine, scheduled basis. A Memorandum of Agreement (MOA) will be developed to include Federal, state and Tribal law and natural resource staff to provide for the enforcement of Federal preservation laws, and made a part of this CRMP. These cultural resources were selected for monitoring because they are considered culturally important to the Affected Tribes or listed on or potentially eligible for the NRHP. These tasks are presented in tables in Section V: Action Plan. Tasks will include development of the Enforcement MOA, conducting investigations with Tribal monitor(s) and consultation with Tribal elders and spiritual leaders to identify TCPs within the project area.

#### **5. Task 5 - Preservation of Eligible and Unevaluated Cultural Resources, Including Traditional Cultural Properties.**

Protective measures will be developed for those sites identified in the previous steps as listed or eligible for the NRHP including those considered culturally or spiritually important to the Affected Tribes. A detailed examination of eligible sites will be made to accurately determine and document the current condition, make field measurements, and develop plans of the sites for preliminary engineering studies. This information will then be used to develop a priority plan for protective measures on these sites. Protective measures include inspection and evaluation for bank stabilization; increased presence of a variety of law enforcement and other personnel through the monitoring program to discourage and prevent looting; fencing; and a Project-wide public education and signage program to discourage looting, to be developed in consultation with Affected Tribes. Engineering studies will then be done to define feasible alternatives for site preservation. The tables in Section V: Action Plan identify sites that are culturally important to the Affected Tribes, eligible or unevaluated for the NRHP.

#### **6. Task 6 - Conduct Staff Training and Implement CRM Procedures**

The staff at the Lake Sakakawea Project Area office will attend training sessions regarding historic preservation activities, to be developed in consultation with Affected Tribes. The list in Section V: Action Plan identifies important topics to be included in this training.

Adherence to and enforcement of the Action Plan can only be accomplished with the informed assistance of District and Tribal resource personnel. Following this training, CRM procedures should be immediately implemented through the coordinated efforts of the Affected Tribes, the cultural resources program manager, and the staff archaeologists.

## **7. Task 7 - CRMP Integration with Corps Planning**

The cultural resource management objectives contained in the CRMP should be incorporated into the project Master Planning and Operational Management Plan (OMP) processes as soon as feasible. The information contained and the principles detailed in the 2004 PA will also be incorporated into this CRMP. The five-year plan for the routine operation and management of the Lake Sakakawea Project Area should be modified to include all pertinent sections of the 2004 PA, including but not limited to, direct, pre-decisional Tribal consultation, staff training, site monitoring and enforcement of Federal preservation laws, inventory/evaluation, site protection, and the enhancement of interpretive programs through consultation with Affected Tribes. This plan and the PA will require pre-decisional consultation with the Affected Tribes and will enable the earliest possible consideration of sacred, cultural and archaeological resources in the planning stage of proposed activities, and ensure that cultural and historic properties are not inadvertently neglected or destroyed as a result of routine Corps operation and maintenance activities.

## **8. Task 8 - Enhance Public Education**

ER 1130-2-540 authorizes the preparation of brief but informative brochures, slide shows, or other media documentation for public presentation relative to historic preservation activities that may be of particular interest to the public. According to ER 1130-2-540, District Commanders should encourage the public use of historic properties under their jurisdiction through such means as restoration and public use of historic buildings and properties, including archaeological sites, through educational displays, media shows, interpretive programs and brochures, signage, or similar means. Affected Tribes will be equal participants in planning for and carrying out any public education program or project that discusses the cultural and environmental resources of the Lake Sakakawea Project Area.

Specific text concerning this task is also provided in the 2004 PA and will be complied with under this CRMP.

## **9. Task 9 – Bi-Annual Update, Review, and Coordination Meeting**

A bi-annual meeting will be held at the Corps Garrison Dam office at Lake Sakakawea. The Affected Tribes and the Corps personnel participating in this meeting will be representatives of the parties who participated in the drafting of the Lake Sakakawea CRMP. The meeting will focus on updating the CRMP, reviewing the effectiveness of the CRMP, and coordinate any events, training, policy or

procedure changes, or updates associated with the cultural resources of the Lake Sakakawea Project Area.

## **II. FOREWORD: THE CULTURAL RESOURCES MANAGEMENT PLAN**

The U.S. Army Corps of Engineers (Corps) Historic Preservation Program for construction, operations and maintenance activities at Civil Works Projects was established in 1987. In conjunction with other Engineer Regulations (ERs), the program is intended to unify historic preservation activities by the consistent and uniform application of policy administered for the public benefit. The development of a Cultural Resources Management Plan (CRMP) is a critical element of the Historic Preservation Program. This CRMP will be appended to the Master Plan and the Operational Management Plan for the Lake Sakakawea Project.

### **A. AUTHORIZATION**

The CRMP presented here was developed in accordance with Engineer Regulation (ER) 1130-2-540 (7)(b), 15 November 1996, which provides guidance for the consideration of historic preservation in Civil Works planning studies, and Engineering Pamphlet (EP) 1130-2-540, section 6-8(f). Section 110 (a)(2) of the National Historic Preservation Act (NHPA) of 1966, as amended (1992), mandates that Federal agencies develop a historic preservation plan which includes the identification, evaluation, nomination to the NRHP, and protection of historic properties under their jurisdiction (16 U.S.C. 470, Section 110 (a)(2)). These properties are to be managed and maintained in a way that considers their cultural, sacred, historic, archaeological, and architectural values. Section 110 (d) calls for agencies to implement this mandate through the integration of historic preservation concerns into agency plans and programs in accordance with the NHPA.

Approximately 30 percent of the Lake Sakakawea project area is within the contemporary exterior boundaries of the Fort Berthold reservation of the Three Affiliated Tribes (The Mandan, Hidatsa and Arikara Nation).

National Park Service (NPS) Bulletin 38, the Executive Order (EO) # 13007 on Sacred Sites, the EO # 13175 on Government to Government Relationships, the American Indian Religious Freedom Act (AIRFA), the National Environmental Protection Act, and the Native American Graves Protection and Repatriation Act (1990) (NAGPRA) with its implementing regulation 43 CFR 10, provide additional Federal mandates for the protection and preservation of cultural and sacred properties, and the inclusion of affected Native American Tribes in that process.

While these laws offer various levels of protection and access to cultural resources, a sacred site may not meet the NRHP criteria for a historic property and conversely a historic property may not meet the criteria for a sacred site. However, in those instances where an undertaking may affect a historic property that is also considered by an Affected Tribe to be of spiritual significance, the Corps should, in the course of the Section 106 review process, consider accommodations for ceremonial use of the property and avoidance of any adverse effects in accordance with EO 13007.

Management of the cultural resources at Lake Sakakawea involves many complex issues and the Corps looks to many sources for authorization and guidance. Requirements surrounding the management of Lake Sakakawea include:

- Historic preservation is an equal and integral part of resource management at operating Civil Works Projects and is due equal consideration along with other resource objectives [ER1130-2-540 (Nov. 15, 1996)], including the appropriation of necessary cultural resource monies.
- The Corps manages historic properties under its jurisdiction in a spirit of stewardship for the benefit of the public, present and future.
- The District Commander shall, by Congressional mandate, inventory and evaluate historic properties on lands in his jurisdiction in order to reduce land use conflicts and ensure protection and preservation of significant cultural resources.
- Whenever archaeological or historic studies are being planned or “scoped” on sites or lands associated with the Affected Tribes, those Tribes will be consulted in a pre-decisional manner. Consultation with Affected Tribes will begin at the initial or scoping level of any proposed projects in the project area and will comply with requirements outlined in the 2004 Programmatic Agreement (PA).
- Cultural items, as defined by NAGPRA (Native American Graves Protection and Repatriation Act), may be repatriated or provided for reinterment to recognized Indian tribes or Native Hawaiian Organizations. Prior to repatriation, commanders must meet the procedural requirements established by NAGPRA and repatriation claims must satisfy the conditions of authenticity established by the Act. At the request of a recognized Indian tribe or Native Hawaiian Organizations, the Corps may assist in the reinterment of NAGPRA cultural items. The Omaha District Corps is also bound by the Memorandum of Agreement signed with member tribes of the North Dakota Intertribal Reinterment Committee and must follow procedures set forth therein when unmarked burials are encountered, threatened or impacted on Omaha District Corps lands or by any District undertaking and which are culturally affiliated with tribal signers of the MOA..
- Information related to the location or character of a historic or traditional cultural property on project lands shall not be revealed to the public if it will create a risk of harm, theft, or destruction to the property.
- Information related to the location or character of sacred, cultural or historic sites associated with the Affected Tribes’ prehistoric, historic or contemporary occupation shall be revealed to the public only with the express written permission of the interviewed Tribal members and the respective tribal government(s) of the Affected Tribes who participated in the development of this CRMP. The information concerning these cultural properties is not subject to the Freedom of Information Act (FOIA) and therefore USACOE would never release this information to the general public.
- The District Commander will ensure that consideration in all management and construction activities with the potential to impact sacred and cultural properties is

completed in a manner which complies with federal law and regulations, the 2004 Programmatic Agreement and the NDIRC Memorandum of Agreement.

- Information contained in the CRMP will be incorporated in the project Master Plan and the OMP, and where applicable, the District's Five Year Plan.

## **1. Federal Legislation, Regulations, Executive Directives, and Applicable Tribal Law**

A number of Federal laws, regulations, and Executive Orders establish Federal policy and outline Federal involvement in regards to historic preservation activities. A series of ERs provide guidance for the implementation of these laws within the Corps. The more salient of these are briefly discussed below.

### **a. Federal Legislation/Laws**

#### **1906 –Antiquities Act (PL 59-209; 16 USC 431 et seq.; 34 Stat. 225.)**

The President was authorized to designate as National Monuments those areas of the public domain containing "historic landmarks, historic and prehistoric structures and objects of historic or scientific interest." The act also authorized an archaeological permitting system and penalties for site vandalism on Federal lands. There are no compliance requirements under this Act for the Corps. The permitting system was replaced by the permit required under the Archaeological Resources Protection Act of 1979.

#### **1935 - Historic Sites Act (PL 74-292; 16 U.S.C. § 461 et seq.)**

This act defines the first national policy to preserve for public use historic sites, buildings, and objects of national significance. It extends concerns beyond federally owned historic properties. It also authorized the Interior Department to survey and record historic and archaeological sites, operate and manage historic properties, enter into cooperative agreements with individuals and other political entities to protect and preserve historic resources; and provide technical and education services in preservation.

#### **1960 - Reservoir Salvage Act of 1960 (PL 93-291; 16 U.S.C. § 469)**

This act furthers the policy of the Historic Sites Act of 1935 by specifically providing for the preservation of historic and archeological data that would otherwise be lost as a result of Federal construction or other federally licensed or aided activities. It requires all Federal or federally assisted or licensed construction projects to include the survey for cultural resources and undertake the salvage of archaeological resources. It allowed the project agency to either undertake the necessary survey and preservation work itself, or the transfer of funds to the Interior Department to do so. It authorizes as much as one percent of project appropriations to be spent on historic and archeological data recovery for projects over \$50,000.

**1966 - National Historic Preservation Act (NHPA), as amended (PL 89-665; 16 U.S.C. § 470)**

The NHPA established the Federal policy for protecting historic properties in coordination with state and local governments. It authorizes the Secretary of the Interior to expand and maintain the NRHP and determine the criteria of eligibility for listing on the NRHP. The NHPA also established the State Historic Preservation Office (SHPO) which directs statewide historic preservation programs. The President's Advisory Council on Historic Preservation (ACHP) was also established by this Act as an independent agency which advises the President, Congress, and Federal agencies on historic preservation issues.

- 1) **Section 106** of the NHPA requires that Federal agencies consider the effects of agency undertakings on properties included on, or eligible for, the NRHP, prior to approval of the undertaking. It also stipulates that the ACHP be allowed to review and comment on proposed undertakings and their potential effects on historic resources, prior to approval of the undertaking. The Section 106 review process was not defined in the NHPA, but was outlined by the ACHP in a later regulation, 36 CFR 800: Protection of Historic Properties. The review process is designed to integrate preservation concerns with the needs of Federal undertakings.
- 2) **Section 110** of the NHPA details the cultural resource management responsibilities of Federal agencies. Of particular relevance here, Section 110 (a)(2) was amended in 1992 to require that Federal agencies establish a historic preservation program for properties under their jurisdiction. Furthermore, Section 110 (d) requires Federal agencies to integrate historic preservation concerns into their plans and programs.
- 3) 36 CFR 78: Waiver of Federal Agency Responsibilities  
**36 CFR 78 provides the requirements under which Section 110 of the NHPA may be waived in the event of a natural disaster.**
- 4) **36 CFR 800: Protection of Historic Properties**  
This regulation implements Section 106 of the NHPA. It prescribes the process for identification, evaluation and assessment of the effects to historic properties as a result of Federal undertakings.

**1974 - Archaeological and Historic Preservation Act (PL 86-523; 16 U.S.C. § 469-469c)**

This act provides for the preservation of historical and archaeological data impacted as the result of dams and other Federal or federally licensed construction projects. Either the Federal agency or the Secretary, if requested, may undertake survey and recovery or protection of data. It permits the use of



up to one percent of a project's costs for purposes of the act and allocates additional funds. Projects may be halted until survey, recovery and/or protection is completed, except in emergencies such as natural disasters. Compensation for delays is provided for by the act.

**1978 - The American Indian Religious Freedom Act (AIRFA) (PL 95-341; 42 U.S.C. § 1996, et seq.)**

This act calls for the U.S. Government to respect and protect the rights of Indian Tribes to the free exercise of their traditional religions. The courts have interpreted this act as requiring agencies to consider the effects of their actions on traditional religious practices. Federal agencies must make reasonable efforts to ensure religious rights are accommodated.

**1979 - Archaeological Resources Protection Act (PL 96-95; 16 U.S.C. §470aa-11)**

The goal of the Archeological Resources Protection Act (ARPA) is to protect archeological resources on public and Indian lands by establishing criminal and civil penalties for unlawful excavation, removal, or destruction of such resources. It authorizes the major Federal land-managing agencies to establish permit systems for parties excavating or removing archaeological resources. It also supplements and replaces the basic authorities of the 1906 Antiquities Act.

**1) 43 CFR 7: Protection of Archeological Resources**

This regulation implements provisions for ARPA. It also establishes procedures to be followed by all Federal land managers for protecting archeological resources on public and Indian lands.

**2) ARPA Permits**

Agencies or individuals who request permission to conduct historic or archaeological investigations on Corps lands must obtain a permit under the ARPA (See EC 405-1-71). ARPA permits are not required by Corps personnel acting in an official capacity, or by Corps contractors pursuant to contract requirements. State and other agencies that plan to conduct archaeological investigations on Corps owned lands, including those that are leased or permitted require ARPA permits. Permits are granted only to qualified individuals or institutions (see c 2 Qualification Requirements below). An application form must accompany permit requests, and a written proposal that provides the documentation specified in 32 CFR Parts 229.6 and 229.8. ARPA permits are obtained through the Corps District Real Estate Division in coordination with other District elements in order to determine the availability of the land to be permitted (See Section: A. Authorization; Bullet #4). It is also incumbent on the Real Estate Division to identify and consult with any affected Native American Tribes.

**3) Penalty Provisions under ARPA**

The value of historic properties and associated costs resulting from unauthorized activities usually exceeds \$500.00. However, as stated in ER 1130-2-540 Chapter 6, the enforcement actions necessary to investigate, prepare cases, and apprehend violators may be more appropriately handled by others outside of the Corps under the provisions of ARPA. ARPA provides for criminal penalties up to \$100,000.00 and/or five years of imprisonment, and allows for forfeiture to the Federal government of equipment and vehicles used in unauthorized activities. Civil penalties may also be assessed to recover all Federal costs involved in the repair or restoration of historic properties, along with the necessary associated research and report preparation.

**1990 - Native American Graves Protection and Repatriation Act (NAGPRA) (PL 101-601; 25 U.S.C § 3001-13; 104 Stat. 3042)**

NAGPRA provides for the protection and repatriation of Native American and Native Hawaiian human remains and items of sacred and cultural patrimony. NAGPRA establishes Native American ownership of contents of unmarked burials located on federal or tribal lands, or excavated by federal undertakings. Requires Federal agencies and federally assisted museums and other entities to return Native American human remains and items of sacred and cultural patrimony to the federally recognized Indian Tribes or Native Hawaiian groups with which they are associated. The emphasis of the act is on direct, meaningful and pre-decisional consultation with Native American Tribes and Native Hawaiian organizations to ensure that these entities play a major role in the treatment and disposition of ancestral remains and objects of sacred and cultural patrimony.

**2000 - The Abandoned Shipwrecks Act (P L 100-298 (43 U.S.C. § 2101 et seq.)**

The act asserts U.S. title to abandoned shipwrecks, within the lands controlled by “a State” and transfers title to the States. The Tribe owns abandoned shipwrecks in or on Tribal land.

**b. Excerpts Specific to Cultural Resources:**

**1949 - Federal Property and Administrative Services Act of 1949 (Public Law 105-27)**

This act provides for the transfer of excess property among Federal agencies and other organizations; transfer of real property located in Indian reservations to the Secretary of the Interior.

**C. c.Other Pertinent Laws:**

**1966 - Freedom of Information Act (FOIA) (5 U.S.C. § 552)**

The Freedom of Information Act creates procedures whereby any member of the public may obtain the records of the agencies of the Federal government. Among other limitations, archival records are exempted from release. Cultural Resource location data are exempted (16 U.S.C. 4702-3).

**1969 - National Environmental Policy Act (NEPA) (PL 91-190, 42 U.S.C. §4321-4347)**

NEPA establishes national policy regarding the environment and requires that Federal agencies prepare a detailed statement of the environmental impacts of any major Federal action significantly affecting the quality of the human environment. NEPA does not define cultural resources or historic properties as a specific theme of consideration. Instead, the law requires that agencies consider the effects of their actions on all aspects of the human environment, including any impacts to sacred and cultural resources and other historic properties. Given that streams, rivers and other sources of water are consistently defined by tribal peoples as cultural and sacred places, NEPA requirements must be considered for compliance on Corps projects and undertakings.

**d. Regulations:**

**36 CFR 3: Enforcement Authority**

Title 36 CFR, Chapter III, Part 327 provides the only authority available to Corps personnel for the protection of historic properties. After a 40-hour course on the Visitor Assistance Program, the authority to enforce these regulations is given to each Ranger. The enforcement procedures available to the Rangers include written warnings, citations with a collateral forfeiture amount, and referral to the U.S. Magistrate. Violations against this regulation are misdemeanors punishable by a six-month imprisonment and a fine up to \$5,000.00.

However, a new law enforcement procedure, embodied in the PA and MOA to be made a part of this CRMP, will provide for the joint enforcement actions of personnel from the Bureau of Indian Affairs, Mandan, Hidatsa and Arikara Nation Tribal Police, and Game & Fish wardens, as well as other state and Federal agency officers who are able to assist in enforcement activities.

**36 CFR 60: National Register of Historic Places**

These regulations provide the authorization, expansion and utilization of the NRHP.

36 CFR 61: .....Procedures for

This regulation provides the process for approving Historic Preservation Programs, certification of Certified Local Governments (CLG), and allocation by states of a share of the CLG grant monies.

### **36 CFR 65: National Historic Landmarks Program, (NPS)**

This regulation sets forth the criteria in designating a landmark under the National Historic Landmarks Program.

### **43 CFR 10: Native American Graves Protection and Repatriation Act (NAGPRA)**

NAGPRA establishes definitions and procedures for lineal descendants, Indian Tribes, Native Hawaiian organizations, museums and other entities receiving federal funding, and Federal agencies to determine the disposition of certain Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony and to provide for consultation with the Affected Tribes with which they are affiliated. It provides for the creation of agreements between federal/other institutions and tribes which determine repatriation, protection of existing burials, inadvertent discoveries and other activities (see Attachment NDIRC MOA).

#### **e. Executive Orders**

#### **Executive Order 11593 - Protection and Enhancement of the Cultural Environment**

This EO directs Federal agencies to take a leadership role in the preservation, restoration, and maintenance of the historic and cultural environment of the nation.

#### **Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations**

EO 12898 requires that agencies try to avoid disproportionate and adverse environmental impacts on low income and minority populations. Impacts may include important cultural, religious, subsistence or social practices.

#### **Executive Order 13175 - Consultation and Coordination with Indian Tribal Governments**

EO 13175 outlines policy and criteria establishing regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications. It also strengthens the United States government-to-government relationships with Indian Tribes, and to reduce the imposition of unfunded mandates upon Indian Tribes.

#### **Executive Order 13006 - Locating Federal Facilities on Historic Properties**

EO 13006 requires that Federal agencies give priority to using historic buildings found in historic districts of central business areas to meet their mission requirements.

### **Executive Order 13007 - Indian Sacred Sites**

EO 13007 requires that agencies avoid damage to sites and places on federal land that are of significant sacred and cultural importance to Affected Tribes, and avoid blocking access to such sites for traditional religious practitioners.

#### **f. Policy**

### **Concerning Distribution of Eagle Feathers for Native American Religious Purposes**

These are the policy and procedural changes to facilitate the collection and distribution of scarce eagle bodies and parts for religious purpose (59 F.R. 22953, April 29, 1994).

### **Department of Defense (DOD), American Indian and Alaska Native Policy, October 20, 1998**

These principles establish the DOD American Indian and Alaska Native policy for interacting and working with federally recognized American Indian and Alaska Native governments. The policy states that DOD personnel must consider the unique qualities of individual Tribes when applying these principles, particularly at the installation level.

#### **g. National Register Bulletins**

### **No. 18: How to Evaluate and Nominate Designed Historic Landscapes**

National Register Bulletin No. 18 provides guidance for the preparation of nominations for designed historic landscapes to the NRHP.

### **No. 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties**

In this bulletin guidance is provided for the identification, assessment, and documentation of TCPs.

## **2. US Army Corps of Engineers Historic Preservation Standards, Regulations and Policies**

Cultural resources are considered in various Corps regulations and other policy directives.

a. **Regulations**

**ER 405-1-12 - Real Estate Handbook**

THE REAL ESTATE HANDBOOK PROVIDES PROCEDURES FOR ISSUING ARCHEOLOGICAL PERMITS ON PROJECT LANDS.

**ER 1105-2-100 - Civil Works Planning Studies**

ER 1105-2-100 provides guidance for the consideration of historic preservation issues in civil works planning studies.

**ER 1130-2-1 - Environmental Compliance Program at Corps Projects and Activities**

ER 1130-2-1 provides guidance to Corps commanders to achieve and maintain full compliance with all applicable environmental laws and regulatory requirements.

**ER 1130-2-433 - Collections Management and Curation of Archeological and Historical Data**

ER 1130-2-433 establishes general regulatory policy, procedures and standards for the curation and management of archeological and historical artifact collections.

**ER 1130-2-438 - Project Construction and Operation Historic Preservation Program**

ER 1130-2-438 establishes the Historic Preservation Program for construction, operations and maintenance activities in civil works projects.

**ER 1130-2-540 (Nov. 15, 1996) – Cultural Resource Management- Project Operations: Environmental Stewardship Operations and Maintenance Guidance and Procedures.** Among other things, this regulation details the policy for the management and protection of cultural resources at operating civil works projects. The regulation states that these properties are to be given “just and equal” consideration along with other resources in the preparation of Master and Operational Plans and mandates the development of a CRMP for each operational Corps project, as appropriate.

b. **Policy**

**Guidance Letter #57: Indian Sovereignty and Government-to-Government Relations with Indian Tribes**

Guidance Letter #57 provides the principals for conducting Government-to-Government Relations.

**Memorandum of Agreement with the North Dakota Intertribal Reinterment Committee, 1992**

The agreement provides for the protection and reburial of contents of unmarked burials associated with North Dakota and other Tribes that are threatened or impacted on all lands managed by the Omaha District of the Corps.

**A Message from the Division Commander, October 2002**

A Division-wide directive outlining the Corps' responsibilities to Missouri River Tribes and their associated cultural resources.

**3. Other Guidance:**

**a. Leases and Permits**

Leases and permits are considered to be Corps undertakings, and it is the responsibility of the District Engineer to ensure that no significant historic or cultural properties on leased or permitted lands are adversely impacted by agency undertakings. On lands leased from the Corps by the states (i.e. State Parks, Fish and Wildlife Management), the state is directed to comply with historic preservation legislation and regulations prior to any proposed undertakings in coordination with the Omaha District Corps (ER 405-1-12).

**b. Applicable Tribal Laws**

Applicable Tribal laws are defined as any Tribal Council resolution, or section of Tribal code or Tribal constitution which governs treatment of, access to, removal of any object there from, destruction of, or avoidance of any sacred, cultural or historic site or other resource associated with the Affected Tribes. This definition also includes any permitting process operated by Affected Tribes, as well as beliefs, values and teachings governing appropriate actions in any sacred, cultural or historic site associated with the Affected Tribes.

- **Applicable Tribal Law & Permits**

The Affected Tribes are individually drafting Tribal legislation governing the preservation and protection of cultural resources within their exterior boundaries. The various legislation, once adopted, will require the development of tribally appropriate stipulations regarding cultural, spiritual, historical, and natural resources, to become a part of all leases and permits issued within the exterior boundaries of each respective Affected Tribe's reservation. The legislation will also establish a tribally governed permit process for those activities being proposed on lands within the exterior boundaries of the Affected Tribes. This CRMP will incorporate requirements of applicable tribal laws and permits as they are adopted and presented to the Corps by Affected Tribes. Tribal People follow natural law and it is a goal of this plan to incorporate their values into management practices at the Lake Sakakawea project area.

**c. ARPA Permits**

Agencies or individuals who request permission to conduct historic or archaeological investigations on Corps lands must obtain a permit under ARPA

(See EC 405-1-71). ARPA permits are not required by Corps personnel acting in an official capacity, or by Corps contractors pursuant to contract requirements. State and other agencies that plan to conduct archaeological investigations on Corps owned lands, including those that are leased or permitted, require ARPA permits. Permits are granted only to qualified individuals or institutions (see 2 - Qualification Requirements below). An application form must accompany permit requests, along with a written proposal that provides the documentation specified in 32 CFR Parts 229.6 and 229.8. ARPA permits are obtained through the District Real Estate Division in coordination with other District elements in order to determine the availability of the land to be permitted (See Section A. Authorization; Bullet #4).

### **1) Stipulations**

Under the provisions of ARPA Sec. 4 (b), ARPA permits may be issued to an applicant if it is determined that:

- the applicant is qualified to carry out the permitted activity;
- the activity is undertaken for the purpose of preserving or protecting a site or site(s), or furthering archaeological knowledge in the public interest;
- the archaeological resources which are removed from public lands remain the property of the United States and such resources and copies of associated archaeological records and data will be preserved by a university, museum, or other tribal or scientific institution compliant with 36 CFR 79 (Curation of Federally-Owned and Administered Archeological Collections) within the state of discovery.
- the activity pursuant to such permit is not inconsistent with any management plan applicable to the public lands concerned.

### **2) Qualification Requirements**

The qualification requirements for an individual or institutional ARPA permit are found in the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (Federal Register/Vol., 48, No, 190, Thursday, September 29, 1983). These are the criteria used by the National Park Service and are in 36 CFR Part 61.

The minimum requirements for a Principal Investigator include a graduate degree in archaeology, anthropology, or a closely related field plus at least one year of full time professional experience or the equivalent specialized training in archaeological research, administration, or management. In addition, a qualified individual must have at least four months of supervised field and analytic experience in general North American archaeology and a demonstrated ability to carry research to completion.



Furthermore, a professional in prehistoric archaeology must have at least one year of full time professional experience at a supervisory level in the study of the archaeological resources of the prehistoric period. A professional in historic archaeology must exhibit at least one year of full time professional experience in the study of the archaeological resources of the historic period.

**3) Field Work and Report Preparation**

Standards and specifications for field work methodologies and report preparation are found in the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (Federal Register/Vol., 48, No. 190, Thursday, September 29, 1983). Additional standards are found in *Specifications for Archaeological Fieldwork and Assessment Reports* issued by the North Dakota SHPO. See Appendix B for a description of report standards for the Lake Sakakawea Project Area.

**d. Real Estate**

Real estate grants, removal of land from Federal control, and land acquisition are considered Corps undertakings, and effects on cultural resources must be considered prior to the action.

**1) Grants**

If a real estate grant is proposed for lands which have not been surveyed for historic properties, it is the responsibility of the Corps to implement compliance with ER 405-1-12 (Real Estate Handbook). However, the grantee may be allowed to conduct the required surveys at his own convenience and expense provided that the plan of action and the choice of investigator are approved by the District Commander (ER 1130-2-540).

**2) Removal of Land From Federal Control**

It is Corps policy that lands containing significant historic or cultural properties shall not be removed from Federal control (ER 1130-2-400f Change 2, 15 November 1985). Whenever lands identified for excess have not been surveyed for historic properties, or if known properties have not been evaluated for significance, such studies must be undertaken in order to determine if significant historic properties will be adversely affected by declaring those lands excess. According to ER 1130-2-540, these studies, authorized by the NHPA, will use Operations and Maintenance funds. If the lands to be removed from Federal control will come under the jurisdiction of another Federal agency, there will be no effect upon the cultural resources since the new Federal agency will also be bound by the NHPA.

**3) Land Acquisition**

If lands are to be acquired for project purposes, they should be examined prior to acquisition in order to determine the presence of significant

historical or cultural resources, since the presence of these resources could impede the development of a proposed project. Cultural resources that are present on newly acquired lands will be treated according to Federal and Engineer regulations and guidelines.

**e. Enforcement Actions**

Title 36 Regulations for Parks, Forests, and Public Property, Chapter III-U.S. Army Corps of Engineers, Part 327.14, Public Property, states:

(a) Destruction, injury, defacement, removal or any alteration of public property including, but not limited to, developed facilities, natural formations, mineral deposits, historical and archaeological features, paleontological resources, boundary monumentation or markers and vegetative growth, is prohibited except when in accordance with written permission of the District Commander.

**4. Penalty Provisions Under Title 36, Part 327.25, Violation of Rules and Regulations**

This regulation states:

Any person who violates the provisions of the regulations in this part, other than for a failure to pay authorized recreation use fees as separately provided for in Sec. 327.23, may be punished by a fine of not more than \$5,000 or imprisonment for not more than six months or both and may be tried and sentenced in accordance with the provisions of section 3401 of Title 18, United States Code. Persons designated by the District Commander shall have the authority to issue a citation for violation of the regulations in this part, requiring any person charged with the violation to appear before the United States Magistrate within whose jurisdiction the affected water resources development project is located (16 U.S.C. 460d).

On Corps lands within the exterior boundaries of the Ft. Berthold Indian Reservation, the Bureau of Indian Affairs, Division of Law Enforcement, with the support and full involvement of the Tribe, will contract law enforcement activities with Tribal law enforcement personnel and with the Corps. This will allow for greater flexibility in the enforcement of the provisions of ARPA.

**B. PURPOSE AND OBJECTIVE**

The purpose of the CRMP is to provide a comprehensive historic preservation program in order to achieve the federally mandated objective of effective management and protection of historic properties on lands under the jurisdiction of the Corps. To meet this objective, the CRMP for Lake Sakakawea enables the Corps and the Affected Tribes to cooperatively manage the integration of historic preservation activities and project construction, operation, and maintenance activities by providing the following required elements:

- A list of identified historic properties, either in descriptive or tabular form, which includes data pertinent to the purposes of the CRMP is included. Detailed supporting

documentation need not be included in the CRMP, but may be appended as necessary in consultation with Affected Tribes.

- Maps showing site locations, surveyed and unsurveyed portions of the project land, and management units specified as to land use. Maps may be kept separate, or prepared as an overlay, but will not be released to the public.
- A description of field investigations conducted and methods used to identify and evaluate cultural resources.
- A discussion of existing and potential impacts on identified historic properties and unsurveyed portions of project land. This will include a description of past, present, and future land use, and other impacts to the cultural resources.
- The National Register status of all identified historic properties.
- Identification and protection of tribally significant properties and/or sacred sites and Traditional Cultural Properties.
- Identification of site ownership (fee or easement property) and site management (Corps managed, leased, or outgrant property).
- A ranking and scheduling of historic preservation priorities and activities for identified resources. Management decisions may require absolute exclusion of any activity on the site and/or specialized types of preservation techniques to prevent, reduce, or mitigate impacts due to natural or project related impacts.
- A preliminary cost estimate necessary to accomplish remaining activities.
- A description of the relationship between the CRMP and the SHPO's Statewide Comprehensive Historic Preservation Plan.
- A description of the relationship to the Master Plan and Operation Management Plan (OMP) for the project.
- A discussion and prioritization of investigations yet to be completed, including evaluation of archeological sites or cultural properties for the NRHP.

## **C. REQUIRED COORDINATION WITH STATE, TRIBAL, AND FEDERAL AGENCIES**

In accordance with EP 1130-2-540, the CRMP should incorporate the views of the Tribal Historic Preservation Officers (THPO), State Historic Preservation Officers (SHPO), the Advisory Council on Historic Preservation (ACHP), Affected Tribes, and other interested parties in order to achieve an integrated approach to historic preservation activities.

**1. The Tribal Historic Preservation Offices**

This CRMP was prepared in consultation with THPO or Cultural Resources representatives from the Affected Tribes.

**2. The State Historic Preservation Office**

This CRMP was prepared in conjunction with information provided in the State Historic Preservation Comprehensive Plans (SHPCP) which were developed by the SHPO. These documents provide an overview of background material current to 2000, including data pertaining to the regional culture history, and previous research. In addition, the SHPCP provide insights regarding perceived deficiencies or gaps in the current database and suggests possible directions for future research.

**3. Advisory Council on Historic Preservation (ACHP)**

This CRMP was developed in accordance with the April, 1993 draft document "Proposed Council Guidance: Historic Resource Management Plans." In compliance with the recommendations contained within this document, a copy of the CRMP will be forwarded to the ACHP for their review and comment.

**4. Affected Tribes**

Five Federally recognized tribal entities currently reside in the state of North Dakota, yet other Tribes have historic and traditional ties to the project area. They include but may not be limited to:

- Assiniboine and Sioux Tribes of Ft. Peck
- The Crow Nation

This CRMP was prepared in consultation with tribal representatives serving as official designated representative of the Affected Tribes. Tribes actively participating in the discussions related to this document are:

- Mandan, Hidatsa and Arikara Nation (Three Affiliated Tribes)
- Turtle Mountain Band of Chippewa
- The Spirit Lake Sioux Tribe
- The Standing Rock Sioux Tribe
- The Sisseton-Wahpeton Sioux Tribe
- The Assiniboine and Sioux Tribes of Ft. Peck
- The Crow Nation

**5. Interested Parties**

In addition to the Affected Tribes noted above, other groups may need to be contacted as a consulting party for contributions to the CRMP.

## **D. PROCEDURES FOR INADVERTENT DISCOVERIES**

The Corps recognizes the substantial impact that the inadvertent unearthing of ancestral remains, funerary objects, sacred objects, and items of cultural patrimony can have on the communities and

members of the Affected Tribes. In an attempt to ensure proper handling of these inadvertent discoveries, the COE have adopted the following procedures to be abided by all participants, contractors, employees, and other involved parties when an inadvertent discovery is made in connection with the Garrison Dam Project, Lake Sakakawea.

If any human remains are found in the project area which may be culturally affiliated to any one of the Affected Tribes, or any other recognized tribal entities, Public Law 101-601, NAGPRA will be implemented. Furthermore, and notwithstanding NAGPRA (43 CFR 10), the Omaha District of the Corps entered into a MOA in 1993 with various Tribes from North and South Dakota, which sets forth a process for the handling of inadvertent or accidental discoveries of human remains. This MOA was developed to provide for an efficient method for compliance with NAGPRA.

The procedures outlined herein are in accordance with the NAGPRA, (PL 101-601), as well as the North Dakota Intertribal Reinterment Committee (NDIRC) Memorandum of Agreement with the Omaha District Corps.

These procedures are established to facilitate the culturally appropriate handling and disposition of

- 1) human remains,
- 2) funerary objects,
- 3) sacred objects, and
- 4) objects of Cultural Patrimony.

These are defined in the Action Plan by incorporation of the definitions found in the implementing regulations to NAGPRA, 43 CFR part 10.2(d), as follows:

- Human Remains refers to the physical remains of a body of a person of Native American ancestry [43 CFR Part 10.2(d) (1)].
- Funerary objects refers to items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally with or near individual human remains at the time of death or later [43 CFR part 10.2(d)(2)].
- Sacred objects are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions [43 CFR Part 10.2(d)(3)].
- Objects of cultural patrimony are items that have ongoing historical, traditional, or cultural importance central to a Tribe rather than items owned by an individual tribal member [43 CFR Part 10.2(d)(4)].
- These procedures have been established specifically for the Garrison Dam Project Area and those areas considered a part of the management area. These procedures are not intended to conflict with the NDIRC MOA.

**1. Contract Clause for Inadvertently Discovered Funerary Human Remains, Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony.**

Every construction contract for the Garrison Dam Project shall include the following clause:

If, during the course of construction, the contractor or any subcontractor encounters unidentified human remains, funerary objects, sacred objects, or objects of cultural patrimony, the contractor or the subcontractor shall:

1. cease all activities within the vicinity of said items, and

2. immediately notify the EOC at (402) 221-4148, who will notify Affected Tribes, and
3. secure the area from further disturbance.

Upon completing these activities, the contractor or subcontractor may move elsewhere in the project area and resume activities, provided that an attempt has been made by the Corps' archaeologist and representatives of Affected Tribes to ensure, to the furthest extent practicable, that other burials will not be disturbed. This clause authorizes the contracting officer to order delays or changes in work if such items are discovered. Should the contractor or subcontractor fail to report a discovery, the Contract Officer retains the right to press Federal charges and to adjust the contract price or declare null and void of contract to reflect any delays or changes in the work order or additional costs that the Corps may incur due to the failure of the contractor or subcontractor to report said discovery [43 CFR part 10.4 (g)]. The Corps shall provide their contractor(s), in writing, the following step-by-step procedures that the Affected Tribe and Corps have agreed upon to address inadvertent discoveries on Tribal lands.

Once the contractor has contacted the Operations Project Manager about an inadvertent discovery, the Operations Project Manager shall follow the Omaha District Emergency Operations Center Standard Operating Procedures as well as notification procedures outlined in the NDIRC MOA.

All discoveries that involve human remains must be treated as a crime scene until determined otherwise by the appropriate personnel (criminal investigator or other qualified professional), in consultation with Affected Tribes. Once a site is no longer considered a possible crime scene, the Corps' Archaeologist and the Cultural Resources Representative(s) of the Affected Tribe(s) will assume responsibility for the site and the carrying out of these procedures.

It is the policy of the Corps and the Affected Tribes to avoid or minimize any potential impacts that the Garrison Dam/Lake Sakakawea Project may have on cultural sites. If disturbance has occurred when a site is "encountered", and reinterment is required, the goal is to reinter any disturbed burials in the originating location, or as close to it as feasible, and re-route the undertaking or action. If this is not possible then the disturbed burials will be removed to a tribally designated reinterment site for appropriate burial, pursuant to provisions in the NDIRC MOA.

Determine age of the disturbed or endangered burials, if possible, and possibility of lineal descendant claim.

1. If a lineal descendant claim is possible, then initiate consultation with appropriate tribal personnel from the Affected Tribe(s) who may be involved. In coordination with the Corps and the Affected Tribes, ensure that an appropriate search for and, notification of, family members has taken place. (See NAGPRA notification process)
2. If a lineal descendant claim is unproved, then take step 3.
3. Treatment of disturbed or endangered burials will depend on the desires of the claimant Tribe. Notification of and consultation with all Affected Tribes will revolve around the treatment and disposition of the contents of disturbed or endangered burials.
4. There are no unaffiliated disturbed or endangered unmarked burials in the Lake Sakakawea Project Area. The Affected Tribes claim affiliation with all marked or unmarked Native burials in the Project Area. There will be a consensus developed for the handling of all "discoveries" considered "unaffiliated" that will ensure expedited disposition and/or re-interment.

5. Once agreement is reached on the handling of the disturbed or endangered burials, expedite appropriate disposition activities, pursuant to NDRIC MOA.

### III. OVERVIEW

This section presents an overview of the Lake Sakakawea Project. A brief summation of the regional environment and cultural history is provided. The remainder of the section relates to the specific cultural resources in the Lake Sakakawea Project Area. The previous archaeological/historical investigations in the Lake Sakakawea Project Area are summarized, and the significant historic properties identified within the project as a result of these investigations are also discussed.

#### A. PROJECT DESCRIPTION

Lake Sakakawea was designed, built, and is operated by the U.S. Army Corps of Engineers and is regulated by the Missouri River Region Reservoir Control Center in Omaha, Nebraska.

##### 1. Project Description

Lake Sakakawea was the first of six main stem reservoirs completed on the Missouri River and became fully operational in 1953. The lake follows a serpentine course of 178 miles between Garrison Dam and Williston, North Dakota. The shoreline is approximately 1,320 miles long and the reservoir surface area is about 368,000 acres. The average width is two to three miles, with a maximum width of six miles. The maximum depth is approximately 180 feet and can be found near Garrison Dam.

The reservoir resulted in the taking of 152,360 acres of the Fort Berthold Reservation, including 94 percent of the tribe's agricultural lands (Lawson 1982). Numerous Euroamerican farmers and other residents were also displaced by development of Lake Sakakawea.

##### 2. Physiography and Climate

Three main physiographic zones, including the river bottom, river breaks, and upland plain define the project area. The river bottom contains three subdivisions: floodplain, terrace, and marshland. Ecozone subdivisions in the river breaks include badlands, hardwood draw, and upland grasslands. The upland plains are all one ecozone, that being rolling grasslands (COE 1978). The project area climate is high latitude, continental climate marked by distinct seasonal changes (COE 1978).

##### 3. Flora and Fauna

Affected Tribes of the Great Plains made use of a tremendous array of wild prairie plants for medicinal, ceremonial, personal, and culinary purposes. Some of these plants were found along the stream channels, lakes, and topographic breaks among the gallery forest. The gallery forest typically included combinations of cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), burr oak (*Quercus macrocarpa*), box elder (*Acer nugundo*), and ironwood (*Ostrya virginiana*) (Johnson 1971). Understory plants, often found among the gallery forests, included chokecherry (*Prunus virginiana*) and other woody plants supplied supplementary as well as critical resources to the indigenous Nations of the region. Fungi such as morels, bracket fungi, and elm cap were also gathered and used by many Plains groups, both prehistorically and historically (Gilmore 1977).

Numerous wetland plants are known in the project area, with many of these having a long history of use by prehistoric and historic peoples. Among the important species were cattails



(*Typha latifolia*), bullrush (*Scirpus validus*), and arrowhead (*Sagittaria latifolia*) (Gilmore 1977; Angier 1974; Yarnell 1964; Anfinson 1997).

Several plants or floral species found in the Missouri River drainage were used by indigenous populations for dyes, such as colonies of *Protophyceae* and *Zygophyceae*, better known as “pond scum”, the green slime found on ponds or other slow moving or sedimentary water resources. Other sources of dyes included lichens, which were used to produce yellow dyes for porcupine quills (Gilmore 1977).

During the European settlement boom of the late 1870s to the late 1880s, settlers exploited the most convenient building materials producing three types of dwelling structures: log, wood-framed, and sod homes. Within a 50-mile area, riparian forests, such as those along the Big Sioux, James, and Missouri rivers, were exploited to construct log homes (Hudson 1996). Along the Missouri River, individuals would cut wood to sell to the steamboats. After years of this activity combined with the development of several military and trading posts, and to a much lesser degree, cutting of timbers for earth lodge villages, much of the riparian forest along the Missouri River was gone by the 1880s (Smith 1960b).

It is important to note that all plants or floral species found and used by Native Peoples in the Missouri River drainage that are still available today have remained in continuous use by Affected Tribes and need to be managed so that the generations to come will be able to carry out cultural and ceremonial practices associated with these plants.

## **B. SUMMARY OF CULTURAL HISTORY (ARCHAEOLOGICAL PERSPECTIVE) IN THE LAKE SAKAKAWEA PROJECT AREA**

Aboriginal peoples of the upper Missouri River valley, specifically the Mandan, Hidatsa and Arikara, have their own creation stories and histories. These tribes have lived together for so long that they can be considered one tribe in this present age. Generally, tribal histories place the Mandan and Hidatsa as living in the Missouri River valley since their creation. Long and arduous journeys undertaken by the Arikara placed them as living in areas west of the Missouri River in the distant past. However, all of these tribes have formed a close spiritual bond with the Missouri, for example, the Hidatsa call him Grandfather.

Oral histories of creation and tribal origin are often at odds with the archeological record, which is a fairly recent historical record when one understands that tribal origin stories and oral histories are centuries old. Tribal nations understand and define themselves based upon their origin stories and oral histories – it is important to remember that the archeological record and method of understanding the Missouri River’s indigenous Nations is in its relative infancy and should not be accepted as definitive or conclusive. The following is a cultural history compiled from an *archaeological perspective*.

Archaeologists generally divide the prehistoric cultural sequence of the Great Plains into two pre-ceramic and three ceramic material cultures. The earliest pre-ceramic people have been variously designated the Paleoindian, Paleo-American, or Lithic stage and is dated from more than 10,000 to about 4500 BC. Following the first pre-ceramic age is the Archaic, which dates from 4,500 BC to A.D. 1. The first ceramic period is known as the Early Ceramic, Plains Woodland, or Formative stage and dates from A.D. 1 to 950. The next ceramic period is termed the Middle Ceramic, Plains Village, Middle Missouri, or Classic stage and dates from AD 950 to 1500. The final prehistoric classification in the

Great Plains is known as the Late Ceramic, Late Prehistoric, Protohistoric, or Post-Classic stage and dates from A.D. 1500 to 1800.

Following the prehistoric periods in the Great Plains is the historic period, which generally dates from A.D. 1800 to the present. During the final prehistoric stage, considerable overlap with the historic period occurs because of the introduction of European cultural influence and technology. It was also the beginning of the written accounts of events. The stages of cultural development in the Great Plains are defined by changes in technology, settlement, and subsistence. None of the cultural stages are considered confined to their particular range of dates and can fluctuate across regions within the Great Plains (Willey and Phillips 1958; Wedel 1961; Gregg et al. 1996:77-90).

## **1. Paleoindian**

The Paleoindian period is best defined by the presence of extinct megafaunal remains in ecofact assemblages of archaeological sites found in North America. This time period is generally thought of as an era dominated by highly mobile hunting and gathering bands living a nomadic lifestyle and exploiting, by choice, a limited number of resources. In North Dakota, the vast majority of the recorded evidence of Paleoindian occupation is confined to the western portions of the state, west of the Missouri Coteau. About 95 percent of the recorded sites and isolated finds are found along the Missouri River (Gregg 1985; Schneider 1982).

In the Great Plains, Columbian mammoth (*Mammuthus columbi*), long-horned bison (*Bison antiquus*), camel (*Camelops hesterus*), and horse (*Equus* spp.) were the most commonly hunted megafauna. Numerous other game species such as white-tailed and mule deer (*Odocoileus* spp.), wapiti (*Cervus canadensis*), pronghorn (*Antilocapra americana*), canids (*Canis* spp.), rabbits, and rodents were also exploited. Certainly some vegetal foods were collected but archaeological evidence of this activity is scant, but, during the late Paleoindian period, the subsistence became indistinguishable from that noted for the Early Archaic period (Gregg 1985). Groundstone artifacts were recovered from late Paleoindian occupations at the Cherokee Sewer site in northwestern Iowa (Anderson 1980). Other archaeological excavations across North America such as Drynoch Slide and Glenrose in British Columbia, Shawnee Minisink in Pennsylvania, and Plenge in New Jersey, suggest that fishing supplemented the diets of many groups.

### **a. Llano (Clovis) Complex**

The first generally accepted widespread cultural adaptation to be observed in North America is the Llano or Clovis complex, which is believed to date from 9500 BC to 9000 BC. However, there are recent discoveries that suggest Pre-Clovis occupations occurred in the Americas perhaps as early as 30,000 years ago. Archaeological sites attributed to the Pre-Clovis horizon that show promise of containing Pre-Clovis evidence include Monte Verde, Chile (Dillehay 1984:100-109; Dillehay and Quivira 1988:177-191), Meadowcroft Rockshelter, Pennsylvania (Adovasio et al. 1983:163-189), Pendejo Cave, New Mexico (Chrisman et al. 1996:357-376), Selby/Dutton and Lamb Springs, Colorado (Stanford 1979; Stanford et al. 1981), the Big Eddy Site, Missouri (Ray 1997), and Shriver, Missouri (Reagan et al. 1978). These sites are, in most cases, controversial and have yet to be fully accepted by the professional community as evidence for a Pre-Clovis occupation.

Archaeological material identified as belonging to the Llano complex has been found throughout the North American continent from northern Mexico to Alaska. The most

diagnostic artifact of the Llano complex is the Clovis fluted projectile point but other tools have also been identified as belonging in the Clovis toolkit. These tools are also diagnostic of the Llano complex and include prismatic blades, spurred end scrapers, side scrapers, perforators, gravers, unifacial backed knives, bone or ivory foreshafts, and shaft wrenches (Irwin and Wormington 1970). The majority of sites identified as Llano are kill sites or processing stations but a few open camps, quarry sites, and caches have been identified. Some examples of kill, or processing sites, identified with the Llano complex include those at Colby, Wyoming (Frison and Todd 1986), Lange-Ferguson, South Dakota (Hannus 1985), and Sheaman, Wyoming (Frison 1982a). A campsite has been identified at the Lange-Ferguson site and meat caches were found at the Colby site. Another important type of site attributed to the Clovis is the lithic tool cache. Examples of caches have been documented at the Anzick site, Montana (Lahren and Bonnicksen 1974), the Drake site, Colorado (Stanford 1991), and the Simon site, Idaho (Butler 1963) to name a few. Evidence from the Anzick site suggests that these tool caches were related to the burial practices of the Clovis.

Pre-Clovis and Clovis materials are rarely found within the project region due to periglacial conditions such as the presence of wasting glacial ice, meltwater lakes and channels, and barren stony desert (Hallberg and Kemmis 1986:65-68). Isolated finds of Clovis cultural material have been found at the Manitoba and Pembina Escarpments along the northeastern border of North Dakota, the Souris Basin in North Dakota, and in the Lower James River Valley in South Dakota (Gregg et al. 1996:81).

**b. Goshen Complex**

The Goshen complex, which dates between 9000 BC and 8500 BC, appears to follow the Clovis complex in the Northwestern Plains but no Goshen cultural material has been identified east of the Missouri River. This complex is known primarily from excavations conducted at the Mill Iron site in Montana (Frison 1996). Goshen components have also been noted at the Hell Gap (Irwin-Williams et al. 1973) and Carter/Kerr-McGee (Frison 1984) sites in Wyoming and the Jim Pitts site in South Dakota (Frison et al. 1996:8-40). The most distinctive artifact of the Goshen complex is a lanceolate projectile point, which is morphologically similar to the Plainview projectile point from the Southern Great Plains.

**c. Lindenmeier (Folsom) Complex**

By 9000 BC, a new cultural complex appears on the Great Plains known as the Lindenmeier or Folsom complex. The Folsom complex is seen as a hunting culture, which specialized in the taking of what are now extinct forms of bison. Most of the sites affiliated with the Folsom complex are bison kills and processing stations, with the notable exception of the Lindenmeier (Wilmsen and Roberts 1978) site in Colorado, which appears to be an open base camp. The tool assemblage contains a wide array of stone and bone artifacts including Folsom fluted projectile points, channel flakes, spurred end scrapers, side scrapers, bifacial knives, burins, gravers, drill-like tools, choppers, ground stone abraders, bone awls, eyed needles, tubular bone beads, and decorated bone disks (Gunnerson 1987). Several northern and northwestern Plains sites and components have been attributed to the Lindenmeier complex. The complex appears to end about 8000 BC (Gregg 1985; Hofman 1996).

The only archaeological site identified with the Folsom complex at Lake Sakakawea is the Moe site (Schneider 1975). Other Folsom sites in North Dakota include Lake Ilo and Winter sites (Haug 1982). Other well-documented Folsom sites include the Agate

Basin (Frison and Stanford 1982), Hell Gap (Irwin-Williams et al. 1973), and Carter Kerr/McGee sites (Frison 1984) in Wyoming, and the MacHaffie (Forbis and Sperry 1952) and Indian Creek sites (Davis et al. 1987) in Montana. Folsom cultural material within or near the project area has been identified from the Sheyenne River valley, Souris Basin, and lower James River valley. Sites have also been identified in the Minnesota River valley (Lake Traverse-Big Stone Lake), Southern Manitoba, and Southeastern Saskatchewan (Gregg et al. 1996:81).

**d. Plano Tradition**

With the termination of the Lindenmeier complex, an explosion of lanceolate projectile point styles occurred across the Great Plains. These new point types were generally well made lanceolate or shouldered forms with parallel-oblique flaking patterns and heavily ground bases. The types include: Agate Basin, Hell Gap, Midland, Alberta, Cody, Scottsbluff, Eden, Browns Valley, Angostura, Lusk, Frederick, and Pryor Stemmed. Bison (*B. antiquus* and *B. occidentalis*) continued to be the main game species of the Late Paleoindian hunters but camel, wapiti, deer, and pronghorn were also hunted. Sites attributed to this tradition include open camps, kill sites, processing stations, quarries, and lithic workstations. Several Plano complexes have been identified based on tool typology.

**e. Agate Basin Complex**

Agate Basin dates are based on radiocarbon samples from several sites in the Plains and range between 8500 BC and 8000 BC (Hofman 1996:65). Agate Basin components have been identified at the Agate Basin site (Frison and Stanford 1982), Hell Gap site (Irwin-Williams et al. 1973), Carter Kerr/McGee (Frison 1984) in Wyoming, and site 24MA778 (Brumley 1989) in Montana. Sites within the project area containing Agate Basin components include the Moe site (Schneider 1975), Beacon Island Site (Ahler et al. 2002), and site 32DU0662 (Winham et al. 1987), along with isolated finds. Agate Basin archaeological material has been found along the Red, James, and Sheyenne Rivers in eastern North Dakota, as well as southern Manitoba. While not yet accepted in the United States, archaeologists in Manitoba have suggested that Agate Basin be placed in an Early and Late Sisters Hill complex with the Late Sisters Hill being contemporary with the more westerly Cody complex (Gregg et al. 1996:81). Even though few sites associated with Agate Basin have been identified in South Dakota, the complex is distributed across the Plains from Texas to south central Canada. Points identified as Agate basin have been reported as far east as Illinois, Indiana, Ohio, and Michigan (Gregg 1985).

**f. Hell Gap Complex**

Hell Gap is slightly younger, yet overlaps the Agate Basin complex with a date range of 8000 BC to 7500 BC (Hofman 1996:66). Both complexes appear to be related technologically and as a result are occasionally combined in print to form a single complex. Examples of sites assigned to the Hell Gap complex include Sisters Hill (Agogino and Galloway 1965), Casper (Frison 1974), and Seminoe Beach (Miller 1986) in Wyoming and Indian Creek (Davis 1984) in Montana. Hell Gap materials have been found along all of the major drainages of the Dakotas, Nebraska, and Colorado.

**g. Alberta-Cody Complex**

A significant portion of the Late Paleoindian occupation of the Great Plains can be assigned to the Alberta-Cody Complex with dates ranging from 8200 BC to 5500 BC

(Gregg 1985; Hofman 1996:89). The Alberta-Cody Complex, as a technological tradition, has ten projectile point types defined as part of the generalized tool assemblage. These projectile points consist of the Alberta, Scottsbluff I, Scottsbluff II, Scottsbluff III, Eden, Alberta/Cody I, Alberta/Cody II, San Jon, Firstview, and Kersey types (Hofman 1996). Other tools include spurred endscrapers, side scrapers, the Cody Knife, gravers, hammerstones, bifacial preforms, and abraders. Alberta-Cody sites and their components have been identified throughout the Plains including the Horner (Frison and Todd 1987), Finley (Howard 1943), Carter Kerr/McGee (Frison 1984), Hell Gap (Irwin-Williams et al. 1973), and Medicine Lodge Creek (Frison 1991) in Wyoming; MacHaffie (Knudson 1983), Pretty Creek (Loendorf et al. 1981), Sorensen (Husted 1991), Myers-Hindman (Lahren 1976), and Mammoth Meadows (Bonnichsen et al. 1990) in Montana to name a few. Cody complex artifacts have been found along the margins of many glacial and playa lakes throughout North Dakota. Cody material has also been recorded on the Red and James Rivers, the Souris Basin, and Coteau des Prairies (Gregg et al. 1996).

**h. Parallel-Oblique Lanceolate Tradition**

This tradition is defined by the occurrence of several finely made lanceolate projectile points such as the Browns Valley, Lusk, James Allen, Frederick, and Angostura points. The radiocarbon dates for these styles suggest that they are a terminal Paleoindian manifestation that dates between 7280 BC and 5980 BC (Gregg 1985; Gregg et al. 1996). Important sites attributed to this tradition encompass Browns Valley in far Western Minnesota (Jenks 1937); Walth Bay (Falk and Ahler 1988), Travis 2 (Ahler et al. 1977) in South Dakota; Mud Flat (Weston et al. 1979) in North Dakota; Barton Gulch in Montana (Davis et al. 1989); James Allen (Mulloy 1959) and Betty Green (Greene 1967) in Wyoming; and Ray Long in South Dakota (Wheeler 1995).

## **2. Archaic**

By about 4500 BC, most of the megafauna that populated the continent had become extinct. The explanation for these mass extinctions is varied and range from climatic change to over-kill by Paleoindian hunters. Regardless of the mechanism that led to the extinctions, the facts are the climatic conditions changed and the megafauna became extinct. These factors in turn forced modifications to be made in the cultural traditions of the Great Plains. These changes or modifications included an increased diversity in the stone tool assemblage including ground and polished tools, an increased reliance on smaller and more varied game species, the exploitation of a wider array of plant foods, which was followed by an increasing population size and gradual sedentism. Finally, at the end of the Archaic stage, experimentation with plant domestication and ceramics manufacturing became evident (Willey and Phillips 1958).

A unique aspect of the Plains Archaic stage, which is markedly different from the Archaic stage in other areas, is the continuing heavy reliance on bison hunting as a mainstay of the economy. This form of big-game hunting is contrary to the Classic Archaic pattern developed in eastern North America as suggested in the previous paragraph. The reliance on bison hunting coupled with difficulties in developing horticultural techniques led to the Archaic stage being prolonged on the Plains. The Archaic is usually divided into three substages: the Early Archaic, Middle Archaic, and Late Archaic (Frison et al. 1996).

Archaic sites are scattered across the project area, totaling 66 sites and 16 isolated finds (Table 3-1). Site records show seven different categories that Archaic sites have been

recorded as, including three specific archaeological cultures and four general categories. The most common archaeological culture represented is Pelican Lake, which accounts for 39 percent of the Archaic site components and 38 percent of the isolated finds recorded.

<b>Table III-1. Number of Sites and Isolated Finds With Archaic Components at Lake Sakakawea.</b>								
Components Identified	Archaic	McKean	Oxbow	Pelican Lake	Plains Archaic	Middle Archaic	Late Archaic	TOTAL
Sites	15	7	3	26	4	3	8	66
Isolated Finds	3	2		6	3	1	1	16

**a. Early Archaic**

The Early Archaic is recognized by the appearance of several side-notched projectile point types such as the Hawken, Logan Creek, Oxbow, Bitterroot, Pahaska Side-notched, and Blackwater Side-notched points (Frison et al. 1996; Gregg et al. 1996). This substage of the Archaic has been dated as early as 5500 BC, but the majority of the known dates fall between 4500 and 5000 BC (Frison et al. 1996). These radiocarbon dates coincide with the severest aridity of the Altithermal. The modes of subsistence changed only slightly during the Early Archaic. Bison remained the principle game animal while foraging is believed to have taken on a new, increasingly important roll in the economy. Evidence from the Hawken site in Wyoming (Frison et al. 1976), the Itasca (Shay 1971) and Granite Falls (Dobbs and Christianson 1991) sites in Minnesota, the Head-Smashed-In *pishkun* (buffalo jump) in Alberta (Reeves 1978), the Smilden-Rostberg (Larson and Penny 1991) and 32RI775 sites (Running 1995) in North Dakota and the Simonsen (Agogino and Frankforter 1960a) and Cherokee Sewer (Anderson and Semken 1980) in western Iowa demonstrate the importance of bison hunting in the Early Archaic period. Some sites (Hawken, Itasca, and Simonsen) also indicate that extinct subspecies of bison were still being hunted across the Great Plains. Mass kill sites of pronghorn and bighorn sheep, and single kills of deer are also known.

Altithermal conditions led to decreased population in the Great Plains, and this trend is reflected in the habitation sites that have been examined throughout the region. Habitation sites identified in the Northern and Northwestern Plains, and attributed to the Early Archaic include open-air camps, semi-subterranean pithouses, rockshelters, and caves. A number of habitation sites have been discovered, especially in the Big Horn Mountains of Wyoming, Black Hills of South Dakota, and Pryor Mountains of Montana. Habitation sites are rare on the Northern Great Plains and the majority of information on Early Archaic habitation comes from the upland sites such as Mummy Cave (Wedel et al. 1968), Medicine Lodge Creek (Frison 1976; Frison and Wilson 1975), Beaver Creek Shelter (Martin et al. 1988), Lookingbill (Frison 1983), Patten Creek (Keller 1971), Carter and Rice Caves (Frison 1991), the Split Rock Ranch pithouses (Eakin 1987) and the Medicine House pithouse (McGuire et al. 1984). A component of the Logan Creek/Mummy Cave has been documented at the Moe site along the shores of Lake Sakakawea (Schneider 1975b; Gregg 1985).

In addition to kill/processing and habitation sites a few burials, such as the Dunlap-McMurry (Zeimans et al. 1976) and Gray cemeteries (Millar 1978), transient camps, base camps, and stone circle sites have been identified (Gregg 1985). Data from the Early Archaic demonstrates that Plains peoples maintained their small nomadic band existence much like in the previous Paleoindian stage, relying on bison hunting and

foraging for subsistence. The climatic conditions reduced the carrying capacity of the Great Plains forcing population reductions and possibly disrupting patterns of human interaction. This reduction is reflected in the use of local lithic materials and the relatively sparse use of exotic lithic material in archaeological assemblages found in the region (Gregg et al. 1996).

In addition to Hawken-Logan Creek and Mummy Cave manifestations, another Archaic complex, the Old Copper tradition, has been identified in Eastern North Dakota, which appears to span the Early and Middle Archaic. Some data has come to light demonstrating that peoples of the Old Copper tradition may have had contact with the Plains groups of the Eastern Dakotas. Socketed cold-hammered copper projectile points and other copper tools, which appear to date between 5000 BC and 1500 BC, have been found in Archaic contexts along the James and Red Rivers (Steinburg 1970:54; Gregg et al. 1996:83).

**b. Middle Archaic**

Fully modern climatic conditions were established on the Plains by 2000 BC (Frison et al. 1996). The climatic amelioration in turn, led to the establishment of the Middle Archaic which is dated between 4000 BC and 1000 BC (Frison 1991; Gregg et al. 1996). The Middle Archaic continued to be a stage of intensive foraging and bison hunting. New developments include the prolific use of grinding slabs and handstones to process wild seeds. The first tipi-ring or rock circle sites are also noted during this stage. The bison population appears to have increased as reflected in the number of Middle Archaic bison kills. Kill/processing sites of pronghorn, bighorn sheep, and deer are also common. Aside from tipi-ring/stone circle and kill/processing sites, other Middle Archaic sites consist of rockshelters, caves, open-air sites, petroforms, and cemeteries. Diagnostic projectile points of the complex encompass several types including the Oxbow, McKean lanceolate, Duncan, Hanna, and Mallory. Two important Middle Archaic complexes, the Oxbow and McKean, have been identified in the Northern Plains.

The Oxbow complex appears to extend from the Early to Middle Archaic and dates from 3500 BC to 1000 BC (Dahlberg and Whitehurst 1990:80; Frison et al. 1996). Reeves (1983) suggests that the Oxbow evolved out of the Mummy Cave complex between 5500 BC and 3500 BC. Currently known Oxbow complex sites consist of open-air sites on stream terraces, isolated burials and cemeteries, stone circle sites, bison kills (buffalo jumps), bison processing sites (Gregg 1985) and a medicine wheel. The diagnostic artifact of the complex is the Oxbow point; a triangular, concave-based dart point with shallow side notches. Other artifacts identified with the tool kit include plano-convex endscrapers, perforators, unifacial knives, large bifacial knives, bone awls, shell gorgets and beads, grooved mauls, and copper tools and ornaments. The presence of native copper and marine shell demonstrates trade connections with Eastern North America (Dyck 1983). Sites and components assigned to the complex include Oxbow Dam in Saskatchewan (Nero and McCorquodale 1958), Mummy Cave (Wedel et al. 1968) and Dead Indian Creek (Frison and Walker 1984) in Wyoming, and Sun River in Montana (Frison 1991). One cemetery, the Gray site, has indicated affiliation with the Oxbow complex. This cemetery, located in Saskatchewan, has approximately 500 individuals interred (Millar 1978). Little is known about the Oxbow complex in western North Dakota, but based on the projectile point distribution it appears the Little Missouri River region was used by the Oxbow complex people starting around 3050 BC (Gregg 1985).

The McKean complex is a widespread Plains Archaic manifestation with the associated projectile points being found from southwestern Kansas and eastern Colorado, north to Saskatchewan, Manitoba, and Alberta. The complex appears to date from 3000 to 600 BC (Dahlberg and Whitehurst 1990:81) and, based on recorded site distribution, be centered in eastern Wyoming. Three sites along and near Lake Sakakawea have components of the McKean complex, including Mondrian Tree, the Moe site, and Ice Box Canyon (Gregg 1985). This distribution may be misleading since most of the research on these sites has been conducted in this portion of the High Plains. The origins of the McKean complex are not well understood but the appearance of the McKean in the archaeological record is quite sudden and expansive. Indications are that the new style of projectile points associated with McKean moved in from the south, overlapping or mixing with Oxbow complex components.

McKean peoples had a varied subsistence pattern that was well adapted to the High Plains and mountain regions. The environment exploited by the McKean peoples was apparently similar to that of the Early Historic period. Subsistence patterns of the McKean people demonstrate a heavy dependence on wild plant resources, most notably in southern Wyoming (Frison 1991). Several of the artifacts recovered from McKean sites support this observation, as a prolific occurrence of grinding slabs, handstones and roasting pits have been documented. Vegetal materials recovered from archaeological sites indicate that acorn, sedge, wild plum, goosefoot, wild onion, chokecherry, limber pine seed, and buffaloberry were exploited (Gregg 1985; Greiser 1985).

Hunting continued to be an important economic pursuit with bison, pronghorn, deer, wapiti, and bighorn sheep as game species. Bison is generally accepted as the main focus for hunting (Brumley 1975; Buchner 1979; Syms 1970). Other meat sources evident in the faunal remains at sites were dog, rabbit, bear, ground squirrel, marmot, waterfowl, turtles, and a variety of birds (Gregg 1985; Greiser 1985).

The primary diagnostic artifact types affiliated with the McKean complex are the projectile points. A wide variety of projectile point types are associated with the Complex and include: the McKean lanceolate, Hanna, Duncan, and Mallory points. Other lithic tools associated with the McKean tool kit consist of plano-convex endscrapers, spokeshaves, bifacial knives, retouched flake tools, and prismatic cores and blades (Gunnerson 1987:32). Types of McKean sites encompass many varieties: tipi rings/stone circles, rockshelters and caves, kill/processing sites, open sites with and without structures including pithouses. Important McKean sites are too numerous to list but a representative sample of sites includes McKean (Mulloy 1954) in Wyoming, Signal Butte (Strong 1935) in Nebraska, and Gant (Gant and Hurt 1965) and Lightning Spring (Keyser and Fagan 1993) sites in South Dakota.

Additional Middle Archaic manifestations occur in the eastern portion of the Dakotas and Western Minnesota which suggest affiliations with the Eastern Plains. One such site demonstrates that bison hunting was an important pursuit of these eastern foragers. As many as 20, or more bison were killed and butchered near the Canning site, a Middle Archaic winter camp situated near the Red River in Norman County, Minnesota (Michlovic 1988). Bioanthropological research from the Turin site cemetery in Iowa and an isolated sandpit burial from North Dakota have demonstrated physical affinities with Midwestern populations.



**c. Late Archaic**

The long tradition of Archaic foraging and hunting continued in the Late Archaic but increased population density, mesic climatic condition which led to increased biomass, and other poorly understood factors caused foraging and hunting to substantially intensify. On the Northern Plains bison hunting and foraging remained the most important subsistence pursuit but some experimentation with plant domestication possibly occurred. Domesticated dogs also appear to have been a storable food surplus for Late Archaic peoples in the Northern plains. Sites such as 32SN111 and Long Creek have produced evidence of canids being butchered and used as food (Gregg et al. 1996: 83). The most common and widespread Late Archaic cultural manifestation is the Pelican Lake complex which dates between 1500 B.C. to A.D. 250 (Dahlberg and Whitehurst 1990). Pelican Lake artifacts have been noted from Alberta, Saskatchewan, Manitoba, Montana, North and South Dakota, Idaho, Wyoming, Northern Colorado and Nebraska (Peterson et al. 1996).

Pelican Lake is characterized by the occurrence of thin, well made, corner-notched projectile points also known as Pelican Lake points. These points indicate that a new projectile point style was developing and is embodied by wide, deeply notched corners that produce sharp barbs as they intersect the blade edges and bases (Frison 1991). These points are quite different from the preceding lanceolate and side-notched types that typified the earlier Archaic. Most researchers generally believe that Pelican Lake evolved from the preceding McKean complex (Brumley and Rennie 1995: Joyce 1970; Reeves 1970; Peterson et al. 1996). Other Pelican Lake lithic artifacts include scrapers, chisels, bifaces, choppers, drills, and other multi-purpose flake tools. Grinding slabs and handstones were used to process wild grass seeds and other vegetal foods. The favored raw material for chipped stone tools appears to have been Knife River Flint. The bone tool assemblage consists of awls, beamers, hide-grainers, scrapers, and antler tine flakers. Pelican Lake people also wore bone beads and ornaments. Dry cave sites have produced fire-drill elements, spear shafts, basket splints, and knife handles (Peterson et al. 1996).

Pelican Lake sites consist of open camps with and without tipi rings/stone circles, habitation sites on stream terraces or in rock shelters, bison kill and processing sites, chert quarries, and occasional cremation burials (Gregg 1985). The campsites attributed to the complex are usually restricted in terms of material wealth and suggest that Pelican Lake represent small nomadic bands of people. Pelican Lake campsites include Long Creek in Saskatchewan (Wettlaufer and Meyer-Oakes 1960) and Medicine Lodge Creek in Wyoming (Frison 1991). Bison was the primary game species hunted by the Pelican Lake people but other species were also taken including pronghorn, bighorn sheep, grizzly bear, deer (both species), wapiti (elk), small mammals, mussels, and fish. Mass kills of bison attributed to the Pelican Lake include Head-Smashed-In in Alberta (Reeves 1978), Kobold (Davis and Stallcop 1965), and Keaster in Wyoming (Frison 1991). A single cremation, assigned to the Pelican Lake complex, has been identified. This burial was found in the Wind River Canyon area of the southern Bighorn Basin of Wyoming (Frison 1991:103). Documented Pelican Lake sites within or near the project include the Mondrian Tree, Ice Box Canyon Ridge (32MZ0038), and Cinnamon Creek Ridge (Gregg 1985).

### 3. Plains Woodland (Early Ceramic)

A trend toward increased sedentism, intensified horticultural activity, expanding regional exchange networks, and the elaboration of ceremonial activities and mortuary practices characterizes the Woodland stage (Griffin 1967). The origins of these trends can be traced to the Late Archaic, but the elaboration of cultural elements became the hallmark for the period. In addition to these trends, technological changes were also occurring such as the adoption of bow and arrow weaponry and widespread use of ceramic vessels for storage and cooking. These developmental trends form the basis for distinguishing the Early, Middle, and Late Woodland substages. Regional variations in the time and extent to which these traditions were expressed make this tripartite subdivision difficult to employ in certain areas.

The Plains Woodland has been described as the Plains Archaic with pottery and burial ceremonialism (Johnson and Wood 1980). In fact, there may not be any qualitative differences in subsistence economies between the two traditions in North Dakota (Gregg 1985). Within the Lake Sakakawea project area 121 sites and 10 isolated finds with Woodland components have been recorded (Table 3-2).

<b>Table III-2.</b> <b>Plains Woodland Sites by Identified Components at Lake Sakakawea.</b>								
Components Identified	Besant	Avonlea	Old Women's	Woodland	Late Prehistoric/ Woodland	Middle Woodland	Late Woodland	TOTAL
Sites	24	4	1	4	85	2	1	121
Isolated Finds			1		9			10

#### a. Early Plains Woodland

Unlike the Late Archaic settlement system, small, short duration camps adjacent to specific environmental locales typify the Early Woodland occupations in the Midwest. This suggests that small social groups using seasonally occupied specialized extraction camps were exploiting resources within defined localities (Roper 1979; Emerson and Fortier 1986; Seeman 1986).

The Early Woodland stage is generally associated with the initial development of ceramic technology. The ceramics are generally described as thick, stone-tempered with cordmarked exteriors (Montet-White 1968; Farnsworth and Asch 1986; Swenson 1987; Adair 1996), similar to the Fox Lake ware and Crawford ware types of the Midwest. Other characteristics of the stage include development of the bow and arrow technology and subsistence adaptations (Adair 1996).

The Early Plains Woodland stage is poorly understood in the Dakotas. Excavation of the Naze site was one of the first in-depth investigations of an Early Plains Woodland component in the area (Gregg 1987a; 1990). Based on the information from the Naze site and other sites in the region, sites are described as small in extent, seasonal occupations of family groups exploiting local resources of wild plants, cultigens, and animals (Benn 1981, 1990). Apparently the overall population of the Western Prairie family groups were much smaller than contemporary groups found in the central Midwest. Unlike the smaller groups of the Western Prairie, the dense population in the Midwest

enabled large groups to develop complex social interaction (Brown and Vierra 1983).

**b. Middle Plains Woodland Stage**

The Middle Woodland stage is characterized by the widespread manufacture of pottery, mound building, permanent villages, and small-scale gardening of native cultigens. It was during this stage that ceremonialism, the elaboration of mortuary practices, ceramic style, and the chipped-stone industry reached its apex. Throughout the Midwest, ornate objects were widely distributed through elaborate and extensive networks. Some of these objects include marine shell, copper items, mica cutouts, obsidian flaked objects, finely made ceremonial blades, drilled grizzly bear teeth, plummets, ear spools, and platform pipes. The poorly understood Hopewellian Interaction Sphere (HIS) as described by Struever (1964:87-106) is a prehistoric logistics network within which quantities of raw materials circulated, together with the array of stylistic and probably ideological concepts that underwent local modification (Caldwell and Hall 1964). Whatever Hopewell was, it involved an active economy oriented around distant exchange and deep socio-religious attitudes.

In the central Midwest, several major Hopewell centers have been identified: in central Ohio and along the upper Ohio River valley; Crab Orchard center in southern Illinois; the Havana of the central Illinois River valley and central Mississippi River valley; and the Kansas City and Big Bend Hopewell center in central and northwest Missouri. Large areas between the various centers appear to have participated little, if any, in the HIS. The Sonota Complex component of the northeastern Plains is described as occupying the western periphery of the HIS. (Gregg 1987b).

The Middle Plains Woodland people of the study area appear to have been impacted by the HIS. Knife River flint (KRF) artifacts, thought to have been traded within the HIS, have been found in some Early and Middle Plains Woodland sites in western Iowa (Benn 1983). Since the likely origin of the KRF artifacts is North Dakota, it is possible that communication existed between the Middle Plains Woodland peoples of western Iowa and the Dakotas, likely including peoples within the study area. Additional evidence of involvement by the people of the project area in the HIS is the presence of obsidian and copper, common trade items in this elaborate trade network.

Middle Woodland site locations suggest a more sedentary lifestyle. Settlement patterns involved permanent to semi-permanent base camps typically situated at the base of bluffs on valley floors or on side streams just within the bluffs of major valleys (Fortier 1984). Small, seasonally occupied bottomland extraction camps and upland hunting camps have also been defined (Benn 1990). Most Woodland components are assigned by the presence of typical ceramics and characteristic projectile points.

While Middle Woodland gardens were primarily composed of native starchy seed crops, direct accelerator radiocarbon dating has confirmed that maize was present in the Midwest by A.D. 200, although indications are that little, if any, was being consumed (Fritz 1992). The level of horticultural development for the occupants of the eastern Dakotas during this stage is poorly understood. Data recovered from the Naze site did not indicate the presence of gardening in the James River valley (Benz 1987; Gregg 1987a).

The Besant complex was first defined by Wettlaufer (1955) at the Mortlach Site and is geographically located between the Rocky Mountains and the Missouri River Trench and from central Wyoming to the parklands of Alberta (Gregg 1995). The Besant Complex was a bison hunting culture which initially appeared in the northeastern Great Plains in 100 B.C. and spread to the west by around A.D. 100 (Frison 1991). Terminal dates place the end of the Besant Complex at approximately A.D. 800 (Reeves 1970, 1983; Gregg 1985). The decreasing age of sites in the northern and western limits of the complex supports the argument that Besant was intrusive from the Middle Missouri (Kehoe 1973; Reeves 1970, 1983).

One of the most intriguing aspects of the Besant Complex is the incorporation of one of the most sophisticated bison procurement strategies known prior to the introduction of the horse. The Besant developed several techniques to hunt bison and used them simultaneously. These techniques included drivelines and corrals to impound bison, bison jumps, arroyo traps, and low bison jumps into corrals (Frison 1991). Bison kill sites attributed to Besant include the Ruby Bison Pound and the Muddy Creek sites (Frison 1991).

In addition to bison kills and processing sites, Besant campsites have also been found (Joyce 1970). Besant campsites appear to be larger and occupied for longer periods or more frequently re-occupied than previous cultural manifestations such as Pelican Lake. Typically, Besant sites are found in more upland settings.

Along the Missouri River, burial mounds related to the Besant complex are common (Peterson et al. 1999). These mounds measure 17 m to 27 m in diameter and are 0.4 m to 1.7 m high and were once considered related to the Sonota complex (Neuman 1975). The interments include numerous fragmented remains of both males and females, indicating secondary interments. Bison remains are often found a short distance from the mounds (Neuman 1975).

The presence of burial mounds and ceramics suggest that Besant was influenced by the HIS. Lithic debris found at Besant sites indicate that KRF was an important raw resource and suggest that the Besant were involved in the trade of KRF to the Woodland peoples of the HIS to the east (Davis and Zier 1978; Gruhn 1969; Reeves 1970).

Diagnostic artifacts affiliated with the Besant complex include projectile points and ceramics. The projectile points are considered to be the primary diagnostics of this complex. Besant side-notched and the Samantha side-notched are the projectile point styles associated with Besant occupations. The Besant side-notched was a medium to large dart point on a convex blade. Typically the stem is short with straight lateral edges and shallow side notching (Reeves 1970). Samantha side-notched points were arrow points that slowly replaced the Besant point between A.D. 425 and A.D. 700.

The Sonota complex is sandwiched between two very similar cultural complexes in the northern Plains: Besant to the west and Laurel to the east. All three complexes are thought to have thrived in the northern Plains during the same time frame. Components assigned to the Besant complex are common in the western portions of North Dakota (Gregg 1985), whereas components of the Sonota complex are found to the east, including the Missouri River trench (Stoltman 1973; Anfinson et al. 1978;

Ludwickson et al. 1987; Toom 1989) but are typically considered down stream from the project area (Gregg 1985).

**c. Late Plains Woodland Stage**

A decrease in the complexity of ceremonial/mortuary practices and ceramic vessel decoration marks the Late Woodland stage. A traditional view has been that the Late Woodland was a time of de-evolution in the cultural development of the Midwest. Yet important and dynamic cultural and organizational changes were taking place that set the stage for the development of the Plains Village stage (Ford 1977, 1979). Some of these changes include modification of ceramic technology and development of an agricultural economy. The ceramics identified in the Western Prairie region near the project area, referred to as Held Creek ware, are thinner during the early Late Woodland stage.

The subsistence patterns of these people focused on the exploitation of local wild plant foods. They supplemented this diet with domesticated seeds and hunting. A gradual increase in the importance of maize agriculture is noted throughout the Midwest during this period (Ford 1974, 1977; Fritz 1992; Kelly 1984). Archaeological data indicates that gardening probably consisted of a starchy seed complex (Ford 1981) of goosefoot, smartweed, and maygrass.

Settlements were more widely distributed across the landscape as a result of population growth. The data from the Rainbow and Mahaphy, Akers, and Denison (MAD) sites indicate that a seasonal cycle of hunting and gathering was the predominant means dictating subsistence and site distribution. Other sites within the region indicate that base camps were occupied more extensively than during previous stages. Also, some evidence of the HIS is suggested (Benn 1990). Habitation sites are generally found on terraces or low ridge spurs overlooking streams and floodplain environments of the Missouri River and its major tributaries (Ludwickson et al. 1987).

Components of the Sonota complex have been described as extending into the Late Woodland stage. Sites identified with this complex include residential base and field camps, and mortuary sites (Snortland-Coles 1985).

#### **4. Middle Missouri/Plains Village Tradition**

The Middle Missouri Tradition was first identified by Lehmer (1971), as a result of salvage archaeology programs along the Missouri River. These programs were implemented in the 1950s to salvage as much of the archaeological heritage of North America as possible, prior to the construction of a series of dams along the main body of the river. Numerous archaeological sites were excavated in areas that were proposed for inundation by the proposed reservoirs, resulting in the recovery of a substantial amount of data. Only nine sites within the project area have been identified to contain Middle Missouri or Plains Village components. Only two of these sites were excavated (32ME0043 and 32ME0059) by River Basin Survey (RBS) archaeologists. The other seven sites were recorded during surveys, including three possible eagle-trapping sites.

Several sites have been excavated along the Missouri River Trench, among which were village sites identified as variants of the Middle Missouri tradition (Lehmer 1971) and Coalescent tradition (Johnson 1998) (Table III-1). Toom (1992a) has conducted additional work on the radiocarbon dates for the Initial Middle Missouri and has concluded the time

span was less than that proposed by Lehmer (Table 2. 1971). Table III-1 has been adjusted to include Toom's findings. The following discussion of the Middle Missouri variants is based on the taxonomic revisions of Winham and Calbrese (1998), and the cultural traits as outlined by Toom (1992a).

<b>Table III-3</b>		
<b>Chronology of Plains Village Cultures in the Middle Missouri Subarea</b>		
<b>Tradition</b>	<b>Variant</b>	<b>Dates (est.)</b>
Middle Missouri	Initial	A.D. 1000-1300
	Extended	A.D. 1100-1450
	Terminal	A.D. 1300-1500
Coalescent	Initial	A.D. 1300-1600
	Extended	A.D. 1400/1450-1650
	Post-Contact	A.D. 1600-1882

**a. Initial Middle Missouri Variant ca. A.D. 950-1300**

The Initial Middle Missouri variant (IMM) includes those village sites of the Middle Missouri subarea that represent the first major sedentary occupation of the Missouri River (Table III-1) (Winham and Calbrese 1998:278). The distribution of these sites is not confined to the Missouri River channel, but extends throughout eastern South Dakota and westward into the Badlands. One proposed theory suggests that the IMM developed in the southern portion of the northwestern Plains and expanded westward, first appearing around A.D. 1000. Archaeological data indicates that the occupants of the IMM sites were somewhat dependent upon horticulture. Architectural features indicate that their dwellings were large, rectangular earthlodges.

Those sites found in drainages to the east of the Missouri River, including the northeastern Plains subarea and portions of the western Prairie Peninsula, have been classified as the Initial Middle Missouri eastern variant (IMMe). Among the IMMe phases are the Great Oasis, Little Sioux Mill Creek, Big Sioux Mill Creek, Brandon Over, and Cambria (Henning 1983). No Initial Missouri variant sites have been documented in the project area (Gregg 1985).

**b. Extended Middle Missouri Variant ca. A.D. 1100-1450**

It is unclear whether the Extended Middle Missouri variant (EMM) developed from the IMM or from the Woodland peoples of the area. The sites attributed to the EMM occupation developed along the Missouri River. Among the first EMM sites investigated near the project area were within the Knife-Heart, Cannonball, and Grand-Moreau areas. Investigations later extended into the project area (Gregg 1985).

The IMM and EMM are closely related, with ceramic styles being the most consistent differences. Origins of the EMM have not been identified, but it could have formed out of the IMM, another major population movement into the region, or from the local Woodland variants (Gregg 1985). Lehmer (1971)

has posited that EMM groups from North Dakota moved south and forced the IMM peoples there out of the territory. Evidence of the conflict between the two groups has been identified in fortification ditches around contemporary villages. This conflict likely took place around A.D. 1100-1250, but may have extended until A.D. 1400 (Lehmer 1971; Gregg 1985). However, there were likely periods of peaceful relations throughout that period, as material culture appears to become mixed, including architectural characteristics (Gregg 1985).

*c. Terminal Middle Missouri Variant ca. A.D. 1300-1500*

It is generally thought that the Terminal Middle Missouri variant (TMM) is directly related to the EMM. Around A.D. 1300, Central Plains Tradition people entered the Big Bend area of South Dakota (Gregg 1985). This influx of population leads to the TMM. The people of the TMM are considered ancestral to historic groups such as the Mandan (Johnson 1996). Very little of the cultural material had changed throughout the later stages of the Middle Missouri cultural manifestation. Lehmer (1971) thought that the TMM were contemporaneous with the Extended Coalescent. The Coalescent groups, considered ancestral to historic groups such as the Arikara and Pawnee, occupied the southern portions of the Middle Missouri, while the TMM were at the northern end (Gregg 1985).

The main diagnostic artifacts that separate the EMM and the TMM are the ceramics. Other distinct characteristics between the two cultural manifestations include house type, village size, presence or absence of village fortifications, and geographic placement. Houses of the TMM are typically rectangular in shape and larger than the EMM houses. The village sizes increased in the TMM, suggesting that the smaller EMM villages combined into larger villages of the TMM. Fortifications of these large villages of the TMM are also distinctly different from the unfortified EMM villages. The TMM sites are generally found at the northern end of the Middle Missouri subarea (Lehmer 1971).

## **5. Coalescent Tradition**

The Coalescent Tradition term applies to a wide range of late prehistoric and Protohistoric archaeological manifestations found in the eastern Plains and the Midwest Prairie Peninsula (Henning 1970). Lehmer (1971) first defined the Coalescent in terms of Initial and Extended variants. The subsistence systems, settlement patterns, and technologies are broadly similar to those of the Central Plains Tradition (CPT). The period of Coalescent occupation is thought to range from 1300 to 1862 (Table III-1). Four distinct stages of the Coalescent have been identified, including the Initial, Extended, Post Contact, and Disorganized. The following discussion focuses primarily on the Initial and Extended stages.

Six sites within the project area have been identified as containing Coalescent tradition occupations. Two of these sites have been subjected to excavation (32ME0015 and 32ML0039) and two were tested for NRHP eligibility (32DU0002 and 32DU0410).

*a. Initial Coalescent ca. A.D. 1300-1600*

Very little is known about the Initial Coalescent due to a variety of factors. The origins of the stage have generally been thought to combine CPT and Middle Missouri variant (MM) traits (Caldwell 1966; Caldwell and Henning 1978; Lehmer 1954, 1971; Lehmer

and Caldwell 1965; Smith 1963). Recent investigations suggest that the influence on trait development between the CPT and MM was indirect (Steinacher 1983, 1990). A connection between the Initial Coalescent and the CPT, through the St. Helena and Itskari phases or the Basal Coalescent, has also been proposed (O'Brien 1994; Blakeslee 1988; Ludwickson et al. 1987). Johnson (1998:308) proposes that a review of the recent research show:

- 1) The Initial Coalescent did not develop from a blending of the Central Plains and Middle Missouri Traditions, but in its initial form is not distinguishable in most respects from the Central Plains tradition itself;
- 2) There appears to be a temporal overlap between the Initial and Extended Coalescent variants;
- 3) Lehmer's culture-historical model of the Coalescent is not valid along parts of the Missouri River, especially near the Knife River.

Whatever the origin of the Coalescent Tradition, it is generally accepted that these sites represent the late prehistoric and historic villages of the Mandan, Hidatsa, Arikara, Pawnee, Cheyenne, and Ponca.

Village sites of the Initial Coalescent are varied in size, but typically include a form of fortification. Later in the Coalescent the houses become denser in the village sites, possibly resulting from reconfiguration of the widely scattered distribution of houses, typical of the CPT, for fortification(s) (Johnson 1998). It is possible that the widespread communities of the Initial Coalescent were fortified after their initial construction. Like most middle to late prehistoric cultural manifestations on the Plains, ceramics are the most diagnostic artifacts found at Initial Coalescent sites.

#### b. Extended Coalescent ca. A.D. 1400/1450-1650

More Coalescent sites are attributed to the Extended variant than any other, generally distributed along the Missouri River between the White and the Grand rivers. Before the reservoirs were developed, concentrations of these sites could be found at the mouths of the Grand, Moreau, and Cheyenne rivers (Johnson 1998). There are no Extended Coalescent sites in the project area (Gregg 1985).

#### c. Post-Contact Variant ca. A.D. 1600-1862

Post-Contact sites are generally those that date from the time of the first appearance of Euroamerican trade goods. These early trade items are viewed as horizon markers, including a wide range of materials made from copper, brass, iron, glass and even stone in the form of gunflints. Throughout this period trade relations waxed and waned between the various tribes and the Euroamericans. Certain groups became more prominent in the trade networks (see discussion below).

Post-Contact villages were typically placed at the confluence of rivers and their tributaries. Village sizes ranged considerably in the number of houses present. These villages were on average, twice the size as the Extended Coalescent villages and the house was slightly smaller on average than those found in Extended variant sites. Occupation of these Post-Contact villages appears to have been substantially more intense or much longer in duration, as site middens were noted at some sites to be up to



10 feet thick (Johnson 1998; Ahler and Swenson 1987; Strong 1940; Will and Spinden 1906).

Ceramics of the Post-Contact are typically thicker with higher density of tempering and more porous than pottery of the Extended Coalescent. Simple-stamped or smoothed bodies characterize surface finish, and rim exteriors commonly are brushed, simple-stamped, or smoothed. Decoration changed with the addition of more cord- and finger-impressed lips or rims, an increase in the number of undecorated vessels, and a dramatic reduction in the percentage of straight or curved rims with horizontal incisions (Johnson 1998:322-323).

## **6. Historic Overview**

Numerous groups have passed through the project area during the historic stage. Numerous native groups resided, passed through, or utilized raw resources within the project area. The following discussion briefly covers a few of these groups and some of the Euroamerican themes in Dakota history. The following text was added with the permission of the author

### **a. Indigenous Nations**

Noted historians have recognized the Mandan, Hidatsa tribes as major traders on the northern plains. They occupied the strategic position on the Missouri River and in proximity to Canada. John Logan Allen describes the towns of the Mandan at the time of the Lewis and Clark expedition as “the keystone of the Upper Missouri region and had been the focal point of exploration, information interchange, and trading activity in the farther West for three-quarters of a century” (Allen 1975). The Mandan and Hidatsa tribes were uniquely distinguished from all other plains tribes, unusually friendly with white men, and friendly even with their enemies when it came time to trade valuable goods. They positioned themselves strategically in a trading system as it was evolving in the upper Missouri River valley. However, their openness to other tribes and Euro Americans ultimately made them vulnerable to periodic epidemics and aggressive enemies who would take advantage of an epidemic as a good time to attack. Yet during the 1700’s, 1800’s, and early 1900’s a great deal of ethnographic documentation captured many of their customs and means of adaptation in written form as well as in full color on canvas.

The history of the Mandan and Hidatsa tribes is aligned to some extent with the history of the fur trade in North America and the unique roles these tribes played in their adaptation to fur trading empires, trading relationships with other tribes, and their environment. Their strength, adaptation, flexibility, and unusual customs have warranted much attention even in the twentieth century from a wide range of academic professionals who have studied their remains and cultures from a number of perspectives.

There are several different approaches for defining the distinct periods in Mandan and Hidatsa history. The following has been chosen as a beginning point for a basic overview. While the Mandan and Hidatsa were separate tribes (and each of the three Hidatsa villages were each somewhat distinct from the other two Hidatsa villages), all Mandan and Hidatsa villages eventually came to reside in close proximity to each other and practice some of the same

customs. Edward Bruner has put forth the following timeline (Bruner 1961:188):

1250 A.D. – 1500 A. D.	Small Village
1500 A. D. – 1750 A. D.	Pre-Horse Coalescent
1750 A. D. – 1862 A. D.	Fur Trade
1862 A. D. – 1883 A. D.	Military Agency
1883 A. D. – 1953 A. D.	Reservation

The Mandan are thought to have arrived on the Plains from the southeast area of the Mississippi River between 1200 and 1300 A.D. They resembled several cultures, borrowing from the Plains - Woodland cultures and the Eastern Mississippi cultures (Bruner 1961). Taking it one step further, “The Ohio valley would seem to have served as a point of dispersal whence the Plains members of the Siouan stock are supposed to have moved in four successive migrations. The earliest group to leave consisted of the Mandan, Hidatsa, and Crow” (Spinden and Will 1967:97).

During the period of 1250 to 1500 A.D., the Mandan Indians lived in very small communities or hamlets spread over a large area that would become the states of North and South Dakota. Cultural integration was limited and there were distinct dialect differences. The hamlets were fairly isolated from each other geographically and were politically autonomous. “Horticulture and hunting were of equal importance”(Bruner 1961:193) and the villagers were flexible and adjusted to shifting environmental conditions to make strategic use of their resources from year to year. Bottomlands along the rivers were used for agriculture, grasslands for large game, wooded areas for winter protection and providing wood for heat, and rivers and streams for fresh water fish when other sources of food were not obtainable, such as in drought conditions. In 1500 they were still considered indigenous, apparently uninfluenced by white contact (Bruner 1965).

The earlier timeline was given as a point of reference but to better understand the evolution of the impact of trading and other external factors on the tribes going forward it is helpful to break the timeframes of 1500 A.D. and forward into smaller segments. Two well-renown historians who have studied and written prolifically about the Mandan and Hidatsa tribes in the last twenty-five years offer a more segmented time line. It is based on the evolution from being indirectly involved to becoming the middlemen of the trading universe on the Upper Missouri River.

Thomas D. Thiessen would break the Pre-horse Coalescent and Fur Trade periods given in Table 1, or essentially 1500 A.D. to 1860 A.D., into the following four time ranges that appear to more logically provide an appropriate context.

1600 A.D. to 1740 A.D.: “Other Indian tribes, such as the Assiniboiné, acted as middlemen between Missouri villagers”(Thiessen 1993:32-34) and Canadian traders.

The years spanning 1500 to 1750 A.D., with emphasis on the 1600 to 1740 timeframe, were the years of the greatest power, largest population (estimated between 9,000 and 15,000), and most developed culture of the Mandan tribe. The Mandan and Hidatsa tribes gradually became the central marketplace of the northern Plains. By the 1670's fur-trading companies had not yet built forts and posts close to the tribes and were attracting other tribes to posts or factories built at strategic locations at the mouths of rivers. This system gradually evolved into certain northern tribes, such as the Assiniboine, playing the role of middlemen (Lehmer 1971). The Mandan and Hidatsa reportedly had European goods long before their own direct contact with white men. It is clear the Assiniboine tribe did have direct contact with white traders and then subsequently traded with the Mandan and Hidatsa tribes until traders began to range further away, first from headquarters, and later from established posts or forts across the northwest. In any event, several major changes were starting to occur in the late 17<sup>th</sup> and early 18<sup>th</sup> centuries: the horse was introduced to Indians of the Plains, European trade goods were increasingly available, trading began to more directly involve the Mandan, and displacement of the eastern tribes caused more conflict between tribes on the Plains. By the early to mid 1700's change was rapidly occurring in the balance of power and trading systems on the Plains. In 1710 the Mandan did not have guns or horses. By 1750 they had both.

1740 A.D. to 1790 A.D.: At first, "only occasional, intermittent, but direct trade between the Mandan and Hidatsa and French/Canadian traders." Mandan-Hidatsa developed their middleman role and "began to exchange goods and horses with Plains neighbors"(Thiessen 1993:34-36, 41). Trade in garden produce became vigorous.

Displacement of eastern tribes and resulting conflicts across the Plains led to consolidation of the small Mandan villages into nine large towns within a 20-mile radius of the Heart River. With the Hidatsa towns it is estimated there were 12 or 13 towns on the Upper Missouri River located near the Heart and Knife Rivers. The decline of the Mandan had actually started as power began to shift away from the sedentary lifestyle of the eastern Indians to the nomadic warriors of the High Plains. The smallpox epidemic of 1780 – 81 reduced the Mandan population by 68%.

1790 A. D. to 1822 A. D.: "Frequent visits by Euro American traders from the Assiniboine River Valley and St. Louis." NorthWest Company trade is established on a regular basis. By 1822 the NorthWest Company and the Hudson Bay Company were competing fiercely with each other as well as with free traders and an increasing number of tenant traders. "Mandan-Hidatsa continued their middleman role in intertribal trade" (Thiessen 1993:36-39, 41). The towns of the Mandan are further consolidated into two towns and moved north to the Knife River.

1822 A. D. to 1860 A. D.: "Local trade" era via constant contact with American traders. "Succession of trading posts near Knife River, continual supply of Euro American trade goods in Mandan-Hidatsa towns" (Thiessen 1993:39-41). Beaver trade flourished until the late 1830's. Steamboats

provided the ideal form of transportation for heavy buffalo robe shipments and made the Upper Missouri much more accessible to a flood of visitors of all types.

**b. Euroamerican**

In the mid-16th century, the first Europeans to attempt exploration and exploitation of resources in the interior of North America were the Spanish conquistadors, Hernando de Soto and Francisco Vasquez de Coronado, both of which led entradas into portions of the southern United States in the 1540s. De Soto examined the land from Florida, west to the Mississippi and Lower Arkansas, while Coronado explored to the northeast, from Mexico to Arizona and New Mexico into the Central Plains of Kansas. Both of these adventurers laid claim to the Mississippi-Missouri watershed for Spain by right of discovery, failing to acknowledge the Native peoples who were already in sovereign possession of these lands.

After the Spanish explorer Hernando de Soto visited the lower Mississippi River valley in 1541, it took another one hundred thirty-two years (1673) before the French began officially exploring the valley. Some evidence does suggest a French presence in the region as early as the 1630s (Sandoz 1964). The region was claimed for France in the name of King Louis XIV in 1682 by Rene`-Robert Cavelier, sieur de la Salle, again failing to acknowledge that these lands were already in the sovereign possession of indigenous peoples. This region later became known as the Louisiana Territory (Balesi 1992:12; Meyer 1963:26-28). Early explorers of the Missouri River basin included Bourmont (Norall 1988), the Mallet Brothers (Blakeslee 1995), and Truteau (Faye 1943).

The French occupied the territory on a limited basis into the eighteenth century. Initially, fur trappers and miners were based in the Illinois territory, crossing the Mississippi on a seasonal basis to exploit the resources of the Louisiana Territory. France transferred ownership of the Louisiana Territory to Spain in 1763, through the secret Treaty of Fontainebleau. This action kept the territory from the British after the signing of the Treaty of Paris at the end of the Seven Years War or, as it was known in the New World, the French and Indian War. The French, still in the Illinois Territory, moved into present-day Missouri to live under the Spanish regime and escape British control. In the Louisiana Territory, the French maintained their social customs despite Spanish rule (Balesi 1992:107, 140; Meyer 1963:30, 33-36, 42-44).

In 1800, Spain retroceded the Louisiana Territory to France in the Treaty of San Ildefonso, but the Spanish continued to govern it. Four years later Napoleon sold the territory to the United States in an attempt to produce enough money to restart the war in Europe. After the purchase, the U.S. government divided the territory along the 33rd Parallel, producing the Orleans Territory and the Louisiana District. In 1805, the District of Louisiana was renamed the Louisiana Territory. With the creation of the state of Louisiana in 1812, the remainder was called the Missouri Territory.

With the Louisiana Purchase the United States Government authorized a series of official U.S. Army expeditions to explore the newly acquired territory. First of these expeditions, designed to traverse the western half of the continent by traveling up the Missouri River, across the Great Divide, and down the Columbia River, was commanded by Captain Meriwether Lewis and Lieutenant William Clark. Lewis and Clark commanded a small force of 28 soldiers and were accompanied by Sakakawea,

the Hidatsa wife of a French trader who had been hired as a scout. The Lewis and Clark Expedition was befriended and kept alive by the Mandan and Hidatsa during the winter they spent on the upper Missouri. These early explorers made offers of alcohol to the Arikara, but were politely rebuffed, as the Arikara wondered aloud why anyone would want to be made foolish by the white men's liquor.

### 1) *Fur Trade*

The competition between the Hudson Bay Company and North West Company, the two major fur trading companies of North America, caused employees to vie for position throughout the territory (Brown 1980). Fur trade developed as the medium by which Euroamerican and Native groups first interacted in the Dakotas. The first recorded European exploration for the fur trade industry within the current state of North Dakota was conducted in the early 1700s, led by the French-Canadian La-Verendrye (Ritterbush 1996). An intensification of the fur trade business in the area did not develop until the latter portion of the eighteenth and early nineteenth centuries. Documents from these initial ventures serve as the earliest written record of the natural environment and native occupants of the region.

Fur trade posts were not established within the Dakota Territory until after the eighteenth century, however posts were established along the east bank of the Red River in the 1790s (Ritterbush 1996).

Between 1776 and 1805 the Arikaras were firmly established as trade partners with U.S. fur companies (Rogers 1990). It was during this period that furs became more a necessity rather than a luxury (Abel 1939). The next period of Arikara history (1806-1835) saw drastic change in the relationships with the Euroamerican as efforts by fur traders to bypass the Arikara middlemen increased. The Arikara fought to maintain their position as middlemen for the Euroamerican fur trade companies, leading to the Arikara War of 1823 which was the first US military engagement against a Missouri River tribe.

By the 1820s, the American Fur Company was coming into prominence in the Dakota territory (Robinson 1966). This is the same period in which the Hudson Bay and North West companies merged. Several fortified posts were established along the Missouri River for the fur trade.

By the 1830s, the population of beaver and other trappable fur-bearers had diminished significantly in numbers. The fur trade in the region turned more to bison robes. This change in preferred furs allowed the Arikara to become once again a major participant in the Middle Missouri fur trade (Rogers 1990).

### 2) *Military Presence*

The Dakota Territory has a rich military history, generally associated with conflicts between the U.S. Government and the Native American or Indian population. The native inhabitants of the Plains have a complex history, that saw groups forced onto the Plains by more eastern groups who were pressured westward by the Euroamericans. This influx of new populations and the introduction of the horse led to what became known as Plains Indian lifestyle. This lifestyle was very different and often hard for the groups already adapted from hunter-gatherers to swidden-foragers, to agriculturally based societies like

the Arikara, Mandan, and Hidatsa. Those groups more inclined to hunting and gathering, like the Lakota, Kiowa, and Cheyenne, came into conflict with the more sedentary groups. Immigrant tribes, those groups moved to reservations by the U.S. Government also added to the mix of cultures and increased the levels of conflict (Secoy 1992; Grinnell 1910; Mooney 1898; Newcomb 1950; Owsley 1994; Robarchek 1994; Willey 1990).

In 1819, the Sixth Infantry, commanded by Colonel Henry Atkinson, undertook the first U.S. military action up the Missouri River. The goal of the expedition was to discourage the foreign fur trade in the region, namely the British (Mattison 1956). To achieve the preferred results of the expedition, Atkinson was to establish military posts at the mouth of the Yellowstone River and among the Mandan villages in present day North Dakota. The task of reaching the Upper Missouri became difficult and they had to halt for the winter near present day Fort Calhoun, Nebraska. Here they constructed "Cantonment Missouri," but the poor location and construction of the structures was such that the men suffered through the winter (Mattison 1956). Later the post was moved to an area east of the present town of Fort Calhoun and renamed Fort Atkinson.

### 3) **Establishment of Indian Reservations**

Today, many people know South and North Dakota as Indian Country. Within the borders of North Dakota are five reservations consisting of lands retained through treaties by ancestors of Affected Tribes so that the generations to come would have a place to live. As the Euro Americans proceeded westward across the Plains, the US government attempted through a variety of means to separate tribal peoples from their lands and to force assimilation upon the indigenous nations. The Missouri River indigenous Nations, however, clung as tightly they could to their lands and their traditional life ways and are still here to practice most of them today.

### 4) **Steamboats**

The first steamboat to pass through the project area was the *Western Engineer*. This steamer was one of four boats employed by Major Stephen H. Long during his 1819 Yellowstone Expedition. The other three boats did not make it past Council Bluffs, Iowa.

Long's expedition never reached the mouth of the Yellowstone River and failed to establish a fort that would have established a strong foothold for the U.S. in the fur trade of the region. Yet, the trip was successful in demonstrating the power of the U.S. to the river tribes. This impression was by design, as the bow of the ship was shaped like a scaly serpent (Gerber 1974).

Steamboats did not return to the upper Missouri River until 1831, when the *Yellowstone* reached the mouth of the Yellowstone River and Fort Union. The tribes along the river were still quite impressed by the steamboats. The frequent firing of cannon near the established villages enhanced this awe. Within a few years the tribes became accustomed to the ships (Chittenden 1903).

The steamboats brought many things up the river, but none had as much impact on the native population as the diseases transported on these ships. In 1833 the *Yellowstone* brought cholera up the Missouri River and into Kansas. Another

outbreak of cholera occurred in 1849, as numerous steamboats brought infected persons and corpses up the river into Dakota Territory (Chittenden 1903; Gerber 1974). The *Saint Peter's*, a steamboat owned by the American Fur Company, introduced smallpox into Dakota Territory in 1837 (Gerber 1974, Robertson 2001). In 1864, smallpox was reintroduced by another steamboat (Stearn and Stearn 1945).

Steamboats were also linked to the U.S. military actions of the region. Officers working in the area of the river could acquire ships for military service and often did.

As government treaty payments were made, and annuities for native populations grew, the steamboats would be linked directly to the numerous tribes of the Missouri River. When game populations became depleted by the demands and needs of Euro Americans, indigenous populations endured starvation and it became necessary for groups and individuals to develop other means of sustenance. Small winter camps, developed along the Missouri River above the Fort Berthold for chopping wood and selling it to steamboat captains, became an important element of the local economy (Malouf 1961). It was unfortunate that these ships also brought alcohol, a cargo as deadly to the native cultures as the many diseases the ships transported. The use of alcohol among Missouri River indigenous Nations, in fact, was largely shunned until tribal members who fought for the US during WWII came home from the war and its use became more widespread.

Steamboat activity peaked in 1866-67, but decreased rapidly, as railroads became the preferred mode of transport.

### 5) *Early Settlement*

Much of the early Euroamerican settlement of the Dakotas was directly influenced by the advancing railroad. These lines of transportation progressed in segments across the landscape as the native peoples were forced to cede lands to the government and then were pushed onto reservations. The towns established across the Dakotas reflected the paths of these railroads.

#### a) *The Great Dakota Boom*

The 1880s in Dakota Territory history is referred to as the Great Dakota Boom by Robinson (1966). During this period settlers from Norway, Germany, Russia, and various Midwesterners established homesteads in the eastern two-thirds of the Dakotas (Hudson 1996). As these homesteaders flocked into the territory the population soared. These new settlers were enticed by recent uncharacteristically high moisture levels in the region that suggested a humid climate (Briggs 1996; Brookings County History Book Committee 1989). Many posters and flyers were scattered throughout the east, describing the wonderful climate and opportunity awaiting those with the desire to succeed. All they had to do was get on the train(s) and head west into Dakota Territory.

The Too-Much Mistake, a term coined by Robinson (1966), is the period of population and facility overgrowth that gripped the state during the

Great Boom. Exponential growth of the population created “too many farms, too many miles of railroads and roads, too many towns, banks, schools, colleges, churches and governmental institutions, and more people than opportunities—numbers of all that history shows have been far beyond the ability of the state to maintain” (Robinson 1966:2).

*b) The Second Boom*

The second boom of the Dakota Territory settlement began in 1898 and proceeded, although wavering, until the First World War (Robinson 1966). This new explosion of settlers followed a national trend after the depression years of the 1890s. The nation was growing rapidly after the depression and as people moved onto lands taken from indigenous Nations, the US faced the threat of a food shortage. As new farmers established small farmsteads, especially in the western Dakotas, they began to become aware of the conditions they faced. The semiarid land was not suited for most of the farming practices they had become accustomed to in other, more humid areas.

*c) Construction of the Missouri River Mainstem Lakes*

The Garrison Dam project was authorized by the Flood Control Act of 1944, Public Law 534, 78<sup>th</sup> Congress, 2d session, along with four other Missouri River main stem projects—Gavins Point, Fort Randall, Oahe, and Big Bend (U.S. Army Corps of Engineers, Omaha District 1995:I-1). Construction of the lakes along the main stem of the Missouri River by the U.S. Army Corps of Engineers, and the reservoirs on its tributaries by the Bureau of Reclamation can be traced to a complex series of events and people during the 1940s and 1950s. The engineering plan that made these reservoirs possible is the Pick-Sloan Plan, which was also authorized by the Flood Control Act of 1944. The catalyst that began the entire process was the occurrence of random floods along the Missouri River and its tributaries that caused millions of dollars in damage during the early to mid-twentieth century.

Archaeological reconnaissance of the Garrison Dam project area started in 1946. The main reason given for this construction was hydroelectric power, but some of the other functions included flood control, navigation, fish and wildlife, recreation, municipal and industrial water supply, and irrigation (U.S. Army Corps of Engineers, Omaha District 1995). This reservoir, named after the Shoshone woman who helped guide the Lewis and Clark expedition up the Missouri River in 1804 (Lawson 1994), is one of the largest found on the main stem of the Missouri River, with a 212-foot high dam. The reservoir was designed to produce 400,000 kilowatts of power.

At the completion of the reservoir in 1953, Lake Sakakawea inundated 368,000 acres of land. The Fort Berthold Reservation was the most affected by the lake, losing 152,360 acres of their reservation, over one-fifth of the Tribes' total land base. As a result of the inundation, the Fort Berthold Agency town of Elbowoods and the towns of Sanish and communities Nishu, Independence, and Shell Creek were moved. Families



lost not only their homes, but were forced to say good-bye to sacred and cultural places that have an integral part in the history and ceremonial life of the Tribe. A fully self-sustaining economy was destroyed. The sudden loss of cherished river-bottom homelands and an ancient, riverine lifestyle severely impacted the Mandan, Hidatsa and Arikara, who are still recovering from this latest chapter in their tribal holocaust. Several villages, untold numbers of burials and other Native American sites, fossils and geologic outcroppings, as well as military posts and trading posts were inundated (Smith 1960a &b).

Several Euroamerican farmers were also directly impacted by the dam construction. Many of these farmers had to give up the most fertile land on their farms, the Missouri River bottomlands. These lands had sustained major portions of the economies of generations of farmers well before the arrival of the Euroamericans, and now were lost under the waters of Lake Sakakawea.

## **C. CLASSES OF HISTORIC PROPERTIES**

In this CRMP, the term "historic property" applies to both prehistoric and historic entities and refers to sites that are listed on or eligible for the NRHP. The term implies more than standing structures, ruins, monuments, or cemeteries, and encompasses a broad range of material remains that have great cultural and spiritual significance to Affected Tribes or have the potential to provide data relative to the historic or prehistoric human occupation or utilization. The term also refers to any records related to such a property or resource. Section IV (A) of Publication Guidelines for Level of Documentation to Accompany Requests for Determinations of Eligibility for Inclusion in National Register (Federal Register, Vol. 42, No. 183, September 21, 1977) defines five classes of historic properties that can be evaluated against the National Register criteria. Some properties may be classed within more than one of these categories.

### **1. Building**

A building is a structure created to shelter any form of human activity such as a house, barn, church, hotel, or similar structure. Buildings may refer to a historically related complex, such as a courthouse and jail or a house and barn.

### **2. District**

A district is a geographically definable area, urban or rural, possessing a significant concentration, linkage or continuity of sites, buildings, structures, or objects which are united by past events or aesthetically by plan or physical development. A district may also be comprised of individual elements that are separated geographically but are linked by association or history.

### **3. Site**

A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure whether standing, ruined, or vanished, where the location itself maintains historical or archaeological value regardless of the value of any existing structures. Several of these site types listed are generally not considered eligible for the NRHP, but this categorization is not conclusive and each site must be evaluated on a case-by-case basis.

- a. ***Prehistoric Site Types may vary somewhat on a regional basis. The categorization of site types currently follows the reports written for previous work in the project area. These types represent a means of standardization in the reporting and documentation of prehistoric archaeological remains. However, these types are rather general and may need to be refined or more clearly described in order to meet specific research needs.***
- 1) ***Undetermined - Sites that cannot be assigned to a specific site type because of a lack of information are considered to be "undetermined."***
  - 2) **Open Habitation** - These sites vary considerably in size, intensity of occupation, and range of activities performed at them. Sites of this type include small habitations (usually less than 1 hectare <ha> in size) such as hunting, fishing, gathering, and other types of extractive sites, and large habitations (usually over 1 ha in size) such as base camps and villages. Structural remains as well as features and human interments may be present at small habitation sites, while large habitations also contain substantial midden deposits. Small villages and campsites fall within this category.
  - 3) **Site Lead/Isolated Find** - Any single artifact and/or small cluster of flakes not associated with any other prehistoric remains is considered to be a "site lead or an "isolated find". This type of site is often represented by a single diagnostic artifact (e.g., a projectile point) or secondarily deposited materials.
  - 4) **Rockshelter** - A rockshelter site is any natural rock overhang utilized by prehistoric people. These sites are usually habitation areas and often contain thick midden deposits, human burials, and a wide variety of cultural materials. Environmental conditions at many of these sites sometimes results in the preservation of normally perishable items such as baskets and moccasins. Occupation of these sites varies from temporary encampments to long-term occupations.
  - 5) **Caves** - Caves, which are natural solution cavities formed primarily in limestone, were often used by prehistoric peoples. Archaeological remains have not only been found at cave entrances, but also deep within cave systems themselves. Domestic debris (i.e. midden) is primarily found at cave entrances, while cave interiors were often explored and their natural resources sometimes exploited by prehistoric miners. The interiors of caves also served as burial loci.
  - 6) **Quarry** - Natural geologic formations that exhibit evidence of the removal of materials usually chert or stone by prehistoric peoples are generally considered to be quarry sites. Quarries may or may not be associated with a nearby workshop site.
  - 7) **Petroglyph** - Sites with prehistoric designs, usually pecked on natural rock formations, are classified as petroglyphs. This site type may or may not be associated with other types of sites (i.e. rockshelters).

- 8) **Workshop** - This site type is defined as a concentration of chert or other source of rejected artifacts that is not associated with any other cultural remains (i.e. midden, features, or structures). In effect, workshop sites are artifact manufacturing and processing sites.
- 9) **Stone Alignment** – Sites in this category include alignments of cobbles, generally on ridges or high terraces. A wide array of alignments can be included in this category and artifacts are not usually in association with the feature(s). Age and cultural affiliation has not been recorded for the rock alignments in the project area. **Tribal peoples place great emphasis and spiritual significance on stone alignments, stone circles and rock cairns (see below). The purpose of these sacred places is not generally discussed, however, for fear that they and/or information about them will be exploited or the sites destroyed.**
- 10) **Rock Cairn** – Rock cairn sites may include single or multiple features and may be in association with artifact scatters or stone circles. Rock cairns are concentrations or piles of cobbles and boulders and were created by both prehistoric and historic populations. **Rock cairn sites also have a high probability of containing one or more burials and thus have a very high significance for Affected Tribes.**
- 11) **Stone Circle** – Typically referred to as tipi rings, rock circles include circular patterns of cobbles. Many of these circles may be representative of a tipi ring or habitation site, but the function of many others cannot be determined from the survey data. **(See language for Stone Alignment and Rock Cairn, above).**
- 12) **Eagle Trapping Pit** – Sites interpreted as eagle trapping pits are typically depressions on prominent landforms. These sites don't usually include artifacts, unless a multicomponent site, and may have one or more depressions. **Affected Tribes consider eagle trapping pits as sacred places.**
- 13) **Village** – Villages are generally large concentrations of lodge remains. Within the project area, village sites were rather late in time and may include both prehistoric and historic artifacts. **Again, these types of sites are considered sacred by Affected Tribes, for a variety of reasons.**
- 14) **Artifact Scatter** – Sites in this category include surface and exposed subsurface scatters of artifacts. These sites may represent other site types, but generally the survey data is too limited to identify the actual site function.
- 15) **Earthwork** - This site type consists of earth or stone embankments of varying degrees, usually circular, rectangular, or linear. Earthworks are considered to be religious/ceremonial sites utilized by regional prehistoric populations.
- 16) **Isolated Burial** - A single human burial not associated with a cemetery, which may contain one or more individuals, is considered an "isolated burial".
- 17) **Cemetery** - These sites are nonmound human interment areas and consist of a single area or small clusters of burials in a general area.

- 18) **Specialized Activity Area** - This site type consists of the remains of single, short-term cultural activities (e.g., kill/butchering station). As such, artifact inventories associated with this site type tend not to exhibit a great deal of diversity.
- 19) **Traditional Cultural Properties and other culturally sensitive areas** - One kind of cultural significance a property may possess, and that may make it eligible for inclusion in the NRHP is traditional sacred or cultural significance. “Traditional” in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional sacred or cultural significance of a historic property, then, is significance derived from the role the property plays in a community’s historically rooted beliefs, customs, and practices.” (See National Register Bulletin No. 38, Parker and King 1998).
- 20) **Other** – An archaeological site that, for whatever reason, cannot be assigned to any of the previously defined prehistoric site types is placed within this category. An historic archaeological site, or multi-component prehistoric/historic site is usually assigned to this category.

*b. Historic Site Types*

***Historic site categorization within the state reflects some degree of variation. The system used to inventory historic sites by the SHPO includes such site types as Early Commercial Exploitation and Military Presence (fur trading posts, military forts and encampments, trails, and battle grounds), Agricultural, Residential, outbuilding, Military, Commercial, Industrial, Landscape/Park, Education, Religion, Hotel, Government, Transportation, and other. Cemeteries, while a significant cultural resource, are not usually assigned state archaeological site numbers since other laws protect them.***

**4) Object**

An object is a material thing of functional, aesthetic, sacred, cultural, historical, or scientific value that may be, by nature or design, related to a specific setting or environment. The term “material remains” is broader in scope than object and refers to the fact that some important archaeological evidence is intangible. Part 79.4a of 36 CFR 79, *Curation of Federally-Owned and Administered Archeological Collections, Final Rule*, provides the following definition of the term material remains:

Material remains mean artifacts, objects, specimens and other physical evidence that are excavated or removed in connection with efforts to locate, evaluate, document, study, preserve or recover a prehistoric or historic resource. Classes of material remains (and illustrative examples) that may be in a collection include, but are not limited to:

- Components of structures and features such as houses, mills, piers, fortifications, raceways, earthworks and mounds);
- Intact or fragmentary artifacts of human manufacture such as tools, weapons, pottery, basketry, and textiles;

- Intact or fragmentary natural objects used by humans such as rock crystals, leathers and pigments;
- By-products, waste products or debris resulting from the manufacture or use of man-made or natural materials such as slag, dumps, cores and debitage;
- Organic material such as vegetable and animal remains, and coprolites;
- Human remains such as bone, teeth, mummified flesh, burials and cremations – which will not be the subject of study but will be returned immediately, along with funerary objects, to Affected Tribes for reburial;
- Components of petroglyphs, pictographs, intaglios or other works of artistic or symbolic representation;
- Components of shipwrecks such as pieces of the ship's hull, rigging, armaments, apparel, tackle, contents and cargo;
- Environmental and chronometric specimens such as pollen, seeds, woods, shell, bone, charcoal, tree core samples, soil, sediment cores, obsidian, volcanic ash, and baked clay;
- Paleontological specimens that are found in direct physical relationship with a prehistoric or historic resource.”

#### **5) Structure**

A structure is a work made up of interdependent and interrelated parts in a definite pattern organization. Constructed by man, it is often an engineering project large in scale.

### **D. DETERMINATION OF SIGNIFICANCE**

A determination of eligibility (significance influences eligibility determinations) of a cultural resource is generally reached by consensus between the Federal agency and the State Historic Preservation Office (SHPO) or Tribal Historic Preservation Office (THPO). Contracted professional archaeologists, architectural historians and other cultural resources professionals are only empowered to offer opinions to these entities regarding the eligibility of heritage and cultural resources based on the criteria as presented in 36 CFR 60.4. If there is a disagreement on eligibility, the Keeper of the NRHP makes the determination.

#### **1. National Register Criteria**

The NHPA was developed to evaluate and preserve significant cultural resources, establishing a series of significance criteria to assist in the evaluation process. The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- (a) *that are associated with events that have made a significant contribution to the broad patterns of our history; or*
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

## **2. Criteria Considerations**

36 CFR 60.4 lists additional criteria considerations: Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the NRHP. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- (a) A religious property deriving primary significance from architectural or artistic distinction or historical importance.
- (b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event.
- (c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
- (d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events.
- (e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived.
- (f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance.
- (g) A property achieving significance within the past 50 years if it is of exception importance.

## **3. Site Integrity**

To qualify for National Register eligibility under criterion (d) of the NRHP Criteria, by which most of the archaeological sites meet eligibility requirements, the site must

be evaluated in terms of its contextual integrity. For a site to be significant, it is necessary that the data be well preserved and recoverable. Furthermore, the site, or portions of the site, should be intact and undisturbed.

## **E. SUMMARY OF PREVIOUS CULTURAL RESOURCE MANAGEMENT STUDIES IN THE PROJECT AREA**

A variety of cultural resource investigations have taken place within the boundaries of the Lake Sakakawea Project Area (Figure 1 maps). The largest of these projects are discussed in this section; see also Table A, located in Volume II.

### **1. Pre-River Basin Surveys**

The recording of archaeological resources in what is now North Dakota began with the journey of Lewis and Clark in 1804-6. These famous explorers recorded numerous villages up and down the Missouri River. These data are often cited and used for continuing interpretation of the sites later investigated by archaeologists. Information used by modern archaeologists concerning the distribution and location of Protohistoric village sites and early historic sites is often gleaned from early maps sketched in the region (Diller 1946, 1955; Wheat 1957-1963; Wood 1983, 1993).

Nearly a hundred years later, E. R. Steinbrueck and A. B. Stout developed some maps of villages. Though some were inaccurate, Bowers (1965) used them (Lehmer 1971). Additional survey of the Missouri River valley in North Dakota continued between 1911 and 1919, as George Will and Herbert Spinden gathered data on sites and began to interpret the archaeology (Will 1924; Lehmer 1971). Charles De Land (1906) and O.G. Libby (1908) presented additional early historical and archaeological interpretations. In 1944, a monograph was printed that synthesized the archaeology of North Dakota (Will and Hecker 1944).

### **2. Smithsonian Institution's River Basin Survey Project**

During the 1950s, the Pick Sloan Plan was enacted and a series of reservoirs were planned for construction along the Missouri River, many within North Dakota. It was at this time that the massive loss of cultural resources or archaeological sites became a concern. The Missouri River Basin Survey (RBS) was established in an attempt to salvage as much information as possible from the archaeological sites before they were inundated. This was the first action of what became known as Cultural Resource Management (CRM).

Archaeological fieldwork, related to the planned reservoir development along the Missouri River trench, was undertaken from 1946 to 1968. In 1946, Paul L. Cooper and J. Joseph Bauxar conducted a brief reconnaissance of the area. The following year, Marvin F. Kivett began the archaeological reconnaissance study of proposed area of what became Lake Sakakawea. The work focused on locating, listing, and evaluating 70 sites, that were likely to be inundated or otherwise impacted by the project (Smith 1960a, 1960b). The Fort Berthold Indian Reservation was not subjected to the archaeological reconnaissance survey due to lack of permission. It was not until 1950 that permission was granted and a reconnaissance survey program was initiated, resulting in the recording of 55 sites. Excavation at the Rock Village site (32ME0015) was also conducted (Metcalf 1963a). A total of 84 sites were recorded during the reconnaissance surveys of 1950 and 1951 (Smith 1960a, 1960b). During that time period, paleontological crews also conducted studies in the project area (Smith 1960b).

Several other sites were subjected to varying levels of excavation prior to the completion of Lake Sakakawea. One of the excavated sites was the Crow-Flies-High village (32MZ0001) (Malouf 1961). This site is a large, historic village occupied in the 1870s and 1880s by an exile band of Hidatsa who had left Fort Berthold. It is located near New Town, North Dakota. Lake Sakakawea currently inundates the village site.

Excavation of certain historic sites began in 1951. One of the major sites excavated was Fort Stevenson (32ML0001) (Smith 1960b). Another important historic site, Kipp's trading post (32MN0001), was subjected to test excavations that year. The following year, work began on Fort Berthold II.

In addition to the historic site excavations of 1952, work continued on Like-a-Fishhook Village (32ML0002) and several other sites. Among the sites excavated that year was Night-Walker's Butte in the Bull Pasture (32ML0039) and five sites were excavated by Montana State University (32MN0005, 32MN0007, 32MN0008, 32MN0009, and 32MZ0001).

With the reduction in budget, only one site was excavated in 1953. That year, Grandmother's Lodge site was excavated by the State Historical Society of North Dakota.

**3. *1974 Archaeological Survey of Portions of the Garrison Reservoir Shoreline, North Dakota. By Haberman, Thomas W. and Fred Schneider. (1975)***

This report describes the results of the archeological survey of selected segments of the shoreline of Lake Sakakawea. The area surveyed was concentrated in the central portions of the reservoir, primarily in Mountrail and McKenzie counties of the New Town area. Two smaller survey areas were in Dunn and Mercer counties. A total of 51 sites were recorded during the investigation, with 31 sites considered unevaluated against the NRHP criteria of significance.

**4. *Shoreline Survey of Lake Sakakawea from Wild Cow Bay to Tobacco Garden Bay, McKenzie County, North Dakota. By Johnson, Dennis E. (1976)***

In 1976, Dennis Johnson conducted a survey of approximately 20 miles. As a result, he recorded 12 sites, of which seven were historic and five were prehistoric. Eleven site leads were also recorded.

**5. *Shoreline Survey of Lake Sakakawea: The Badlands in Southern Dunn County, North Dakota. By Leaf, Gary R. (1976)***

This report includes information about a survey along the south shore of Little Missouri Bay in Dunn County. The survey covered 60 miles of shoreline and recorded 16 sites and 15 isolated finds.

**6. *U.S. Army Corps of Engineers, In-House Surveys.***

Corps archaeologists have conducted numerous small surveys within the project area. Larry G. Robson conducted the first of these surveys in 1979, and worked through 1981 (Robson 1979a-p, 1980a-p, 1981a-r). Numerous other surveys were conducted within the project area in the 1980s (Harris 1980a-h; Gnabasiak 1981, 1983a-n, 1984a-m, 1985a-l, 1986a-o, 1987a-g, 1988a-h).

**7. *A Cultural Resources Inventory of Eastern Portions of Lake Sakakawea, North Dakota (Mercer and McLean Counties) 2 volumes. By Kalia, Asha (editor) (1982).***

Science Applications, Inc. Golden Co., and Overland Archeology, Inc undertook a cultural resources survey.



8. ***Phase I Intensive Cultural Resource Inventory of the West Portion of Lake Sakakawea in Dunn, McKenzie, Mountrail, and Williams Counties, North Dakota.*** By Van Hoy, Thomas P. and Randy Nathan (1983).

The University of North Dakota conducted this survey in 1981. Ten land tracts were surveyed for a total of 4,000 acres. A total of 30 archaeological sites and 23 prehistoric isolated finds were recorded. Of these sites, 24 were prehistoric, four were historic, and two included both prehistoric and historic components.

9. ***A Reconnaissance Survey and Preliminary Assessment of the Cultural Resources of Lake Sakakawea in Williams and McKenzie Counties, North Dakota.*** By Noisat, Brad, Jeff Campbell, Gary Moore, and Kurt Schweigert (1986)

In 1981, Overland Associates conducted reconnaissance cultural resources survey along the upper shores of Lake Sakakawea. This study included Class I and Class II level investigations for 19,000 acres, of which 16,400 acres were subjected to Class III surveys. During the Class III investigation, 43 sites were recorded, including 22 aboriginal and 21 historic. Nineteen of the sites remained unevaluated against the NRHP criteria of significance. Two other sites, one prehistoric and one historic, were deemed eligible for inclusion in the NRHP. The remaining 22 sites were considered not eligible for the NRHP.

10. ***Cultural Resource Reconnaissance of the U.S. Army Corps of Engineers. Land Alongside Lake Sakakawea in Dunn County, North Dakota.*** By Winham, R. Peter, Kerry A. Lippincott, L. Adrien Hannus, and Edward J. Lueck (1987a).

In 1986, the Archeological Laboratory of the Center of Western Studies, Augustana College in Sioux Falls, South Dakota conducted an archaeological survey of the portion of Dunn County within the project area. Approximately 22,260 acres were surveyed, recording 163 archaeological sites, 165 isolated finds, and investigation of 32 previously recorded sites.

11. ***Cultural Resource Reconnaissance of the U.S. Army Corps of Engineers. Land Alongside Lake Sakakawea in Mountrail County, North Dakota.*** By Winham, R. Peter, Kerry A. Lippincott, and Edward J. Lueck (1987b)

Between the summer of 1985 and late spring 1986, archaeologist from the Archeology Laboratory, Augustana College, Sioux Falls, South Dakota, surveyed approximately 17,280 acres along the left (north) bank of Lake Sakakawea. A total of 176 archaeological sites were recorded and 48 previously recorded sites were revisited. Of the newly recorded sites 131 were prehistoric, 36 were historic, and nine were multicomponent. Isolated finds included 134 newly recorded and five others that had been previously recorded. The five previously recorded isolated finds were not relocated during the investigation. Of the newly recorded isolated finds, 85 were prehistoric, four were animal bones, eight were aerial photographic markers such as stone crosses and rock cairns, 38 were historic or recent debris, and the final one included both prehistoric and historic/modern components. The NRHP status of most of the sites remains unevaluated.

12. ***Archeological Testing of Sites 32MN228 and 32MN331, White Earth Bay Area of Lake Sakakawea, Mountrail County, North Dakota.*** By Winham, R. Peter, Edward J. Lueck, Lynette Rossum, and L. Adrien Hannus (1988).

The Archeology Laboratory of the Center of Western Studies, Augustana College in Sioux Falls, South Dakota conducted site evaluations on 32MN0228 and 32MN0331. Both sites were determined not eligible for inclusion in the NRHP.

13. ***Final Report of a Cultural Resource inventory of Lands owned by the Omaha District, U.S. Army Corps of Engineers, Along the Shoreline of Lake Sakakawea, Mercer County, North Dakota. By Floodman, Mervin G. (1989).***  
In 1987, Powers Elevation, Co. Inc., Aurora, Colorado, conducted a cultural resources survey along the shoreline in Mercer County, North Dakota.
14. ***Archeological Evaluation of Fifteen Sites Located along Lake Sakakawea, Dunn County, North Dakota. By Sanders, Paul H., and Karen L. Kempton (1990).***  
In 1989, Larson-Tibesar Associates., Inc., Laramie, Wyoming conducted NRHP evaluation investigations on 15 sites within the project area. Six of the sites were determined eligible for inclusion in the NRHP (32DU0001, 32DU0002, 32DU0013, 32DU0132, 32DU637, and 32DU770).
15. ***Garrison West, McLean County, North Dakota: Test Excavations of Twelve Sites. By Stine, E., and A. Kulevsky (1990)***  
In 1989, Metcalf Archaeological Consultants, Inc. Bismarck, North Dakota conducted NRHP evaluations on 12 sites. The report was submitted to North Dakota Army National Guard, Bismarck. At least two of the sites (32ML0231 and 32ML0233) were determined eligible for inclusion in the NRHP.
16. ***Cultural Resource Reconnaissance of U.S. Army Corps of Engineers Land Alongside Lake Sakakawea and Audubon Lake in McLean County, ND. By Lueck, Edward J., Kerry Lippincott, R. Peter Winham, and L. Adrien Hannus (1992)***  
This report has 18 volumes describing the cultural resources survey of the left bank of Lake Sakakawea in McLean County. The survey covered approximately 36,060 acres, resulting in the investigation of 438 archaeological sites and 296 isolated finds. The most common archaeological site investigated were artifact scatters (n=235), with 131 prehistoric and 104 historic. Other site types identified were stone circle sites (n=170), rock cairn sites (n=98), pit or depression sites (n=19) of which 14 were eagle trapping pits, historic foundations (n=69), historic depressions (n=69), and graves/cemeteries (n=28).
17. ***Garrison Local Training Area 1999 Archeological Test Excavations, McClean County, North Dakota. By Bales, Jennifer R., Carrie F. Jackson, Dennis L. Toom, Cynthia Kordecki (2001).***  
This report details the results of the NRHP evaluation of six prehistoric artifact scatters, (32ML0058, 32ML0186, 32ML0203, 32ML0234, 32ML235, and 32ML326) and field examination and mapping of site 32ML0239. It was determined that all seven sites did not contain significant research potential and were deemed not eligible for the NRHP and no further work was recommended.

## **F. SUMMARY OF RECORDED PROPERTIES IN THE PROJECT AREA**

The site data presented below and in Table B, located in Volume II, is not final and is subject to change. No one utilizing this document in its final form should make management decisions based solely on its content without consulting the appropriate cultural resource personnel and Tribal archaeologists and monitors. After each Annual Update, Review and Coordination Meeting for the Lake Sakakawea Project Area CRMP, changes in site data will be amended in the CRMP.

As of April, 2004 a total of 2,419 cultural resource properties have been recorded in the Lake Sakakawea project area. Among these resources are 1,502 archaeological sites, 418 site leads, 481 isolated finds, and 18 historic architectural sites.

## G. DESCRIPTION OF SIGNIFICANT SITES AND LISTS OF OTHER KNOWN SITES

This section lists all of the sites within the Lake Sakakawea project area by several different categories. Among these categories are: sites eligible for inclusion in the NRHP, sites classified as undetermined, sites considered TCPs, destroyed sites, not eligible sites, and inundated sites. All of the sites are briefly described with the exception of those not eligible, destroyed, or inundated. Sites are entirely within the project boundaries unless otherwise stated. Table III-4, at the end of this section, lists the sites and gives the map number that the site can be found on in Volume III of this CRMP.

### 1. National Register Eligible Sites

No archaeological sites within the Lake Sakakawea project area have been listed on the NRHP, but 16 archaeological sites and one historic architectural site are currently considered eligible for inclusion in the NRHP:

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

### 2. Undetermined Sites

Five architectural and 1,217 archaeological sites, for a total of 1,222 sites, have been recorded within the Lake Sakakawea project area and classified as undetermined. None of the site leads and isolated finds are included in this section, but are listed in Table B. Three of the architectural sites are found in McKenzie County and the remaining two are in Williams County. The distribution of undetermined sites by county are: 172 in Dunn County, 64 in McKenzie County, 494 in McLean County, 248 in Mercer County, 205 in Mountrail County, and 34 in Williams County. A few of these sites have multiple areas or plots, and Lake Sakakawea has inundated others. The following list also contains a brief overview of each site.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

### 3. Traditional Cultural Properties and Other Sacred Places

At the time this report was initiated, no sites within the Lake Sakakawea project area have been identified as Traditional Cultural Properties (TCP). It is likely that many of the sites recorded are TCP's, but no research, consultation, or tribal monitoring has been completed on the traditional significance of the sites or areas. **The potential for other sacred sites and areas being identified is high.** Based on these projections, a long list of TCP's will develop, but none of the investigations prior to 2003 were conducted with tribal monitors, elders or other Tribal members with expertise.

#### **4. Site Leads**

A total of 148 archaeological site leads have been identified within or adjacent to the Lake Sakakawea project area. These site leads were gleaned from a variety of sources, including historic documents and local informants. They are all considered unevaluated against the NRHP criteria of significance. Six site leads have been identified within or near Lake Sakakawea project area in Dunn County. They include two cemeteries and at least one fur trade related site. Thirty-three site leads are reported within or adjacent to the project area in Mercer County. Little is known about nearly all the Mercer County site leads, but a post office, a prehistoric artifact scatter and a historic homestead have been noted. Site leads in McLean County portion of the project area total 29, of which the only site types reported include a fur trade site, three town or community sites, and a schoolhouse. Twenty-two site leads have been documented in the McKenzie County portions of the project area, including three post offices and a historic Native American campsite. A total of 14 site leads have been listed for portions of Lake Sakakawea in Mountrail County. Some of the site types identified include four town sites, two bridges, two post offices, and a community center. Fifty-eight site leads have been given numbers in Williams County. These leads include the undetermined location of abandoned villages, forts or military post, post offices, towns and communities, schools, churches and other poorly documented sites.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

#### **5. Destroyed Sites**

A total of 29 archaeological sites within the Lake Sakakawea project area have been identified as destroyed or possibly destroyed. Twenty two of the sites were destroyed by erosion, including 32DU0160, 32DU0405, 32DU0409, 32DU0412, 32DU0414, 32DU0416, 32DU0633, 32DU0634 (Winham, et al. 1987), 32ME0907, 32ME0963, 32ME0964, 32ME0965, 32ME0982 (Floodman 1989), 32ML0042, 32ML0048, 32ML0184, 32ML0337 (Lueck, et al. 1992), 32MN0015, 32MN0202, 32MN0203, 32MN0204, and 32MN0380 (Winham, et al. 1987). Site 32MN0156 was destroyed by road construction (Winham, et al. 1987) and site 32ME0031 was destroyed by dam construction, while site 32ME863 was also destroyed by a construction project (Floodman 1989).

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

#### **6. Inundated sites**

A total of 96 archaeological sites within the Lake Sakakawea project area are currently inundated. All but one of these sites remain unevaluated against the NRHP criteria of significance. Five of these sites are large villages that were investigated during the Smithsonian Institutions River Basin Surveys project. They include Crow Flies High Village (32MZ0001) (Malouf 1961), the Starr Village (32ME0016) (Metcalf 1963b), site 32ME0043 (Malouf 1951), Like-a-Fishhook Village (32ML0002) (Metcalf 1963; Smith 1972), and Nightwalker's Butte in the Big Pasture (32ML0039) (Metcalf and White 1953). A military post, Fort Stevenson (32ML0001) (Smith 1960b) was also subjected to extensive excavation, as was an early historic trading post, Kipp's Post (32MN0001) (Woolworth and Wood 1960).

Eleven other inundated sites had limited excavations conducted on them by the RBS archaeologists. The following table lists the inundated sites.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

## **7. Sites Determined Not Eligible for Listing on the National Register**

Sites totaling 242 within the Lake Sakakawea project area have been identified as not eligible for listing on the NRHP. **It should be noted that this determination was made without consultation with Affected Tribes.** Nor were they evaluated for Traditional Cultural Property status. These sites should therefore be revisited and reinvestigated to determine if representatives of Affected Tribes could add information which could change their current status. All the destroyed sites listed above are also included in the following table of not eligible sites.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

## IV. LAND USE GUIDE

This part of the CRMP describes 1) agency land use practices in the Project Area, 2) associated effects on historic properties, and 3) alternative treatments for mitigating adverse effects. This section is intended to provide an awareness of the kinds of activities and processes resulting from construction and development, freshwater inundation, and routine operation and maintenance at lake projects which threaten the integrity of historic properties. The recognition of these impacts will allow resource managers and planners to make informed decisions to ensure the protection of historic properties under their jurisdiction.

### A. LAND USE AT LAKE SAKAKAWEA

Agencies at the Federal, state, and local levels manage portions of the Corps-owned land at Lake Sakakawea. This section outlines agency land use and activities at Lake Sakakawea. Activities associated with the daily operation and maintenance of agency missions may affect the integrity of historic properties. The fee acreage at Lake Sakakawea is allocated for specific land uses, which have variable effects upon historic properties, Figure 1, Volume III, presents the land allocation maps of Lake Sakakawea. Land use responsibilities and activities are described as follows:

- **Project Operations**-The Corps has retained management responsibilities for 1129.564 acres within the Project Area.
- **Recreation, Intensive Use**-This classification includes 6587.045 acres, which have been set aside for intensive use facilities such as boat ramps and marinas. It also includes land that is located between the recreation land and the seasonal pool. The use of the latter may be restricted periodically during high water.
- **Recreation, Low Density Use**-This land use classification describes use between non-compatible areas, such as between intensive recreation and wildlife management. Trail use, nature study, and other low-density activities occur in these intermediate areas, which total 1787.997 acres. Lands that are situated around roads and bridges are included because of their use for bank fishing.
- **Wildlife Management**- 51680.091 acres are designated for wildlife management. Programs designed for the enhancement of wildlife include planting of food plots and brush control.
- **Natural Areas**- A total of 62397.241 acres are catalogued as natural areas within the Lake Sakakawea project area.

#### 1. Management Responsibilities

Aside from the Corps, Bureau of Reclamation (BOR), Bureau of Indian Affairs (BIA), and the Three Affiliated Tribes, two state agencies hold leases/licenses at Lake Sakakawea. Several county and community managed recreation areas and privately operated concessions are also located on Corps fee lands at Lake Sakakawea. A few agricultural leases to private individuals are present as well. Leased areas are monitored to assure compliance with all Federal regulations.

**a. Federal**

The Corps has direct responsibilities for the flood control aspect of the project, including maintenance and operation of the dam, tower, and outlet works. Additionally, the Corps manages certain recreational sites, the sewage lagoons below the dam and administers the Shoreline Management Plan and Visitor Assistance activities.

**b. Tribal Agencies**

The Bureau of Indian Affairs manages the grazing leases within the exterior boundaries of the Fort Berthold Reservation and leases five recreation areas within the reservation: McKenzie Bay, Charging Eagle, Skunk Creek, Pouch Point, and Four Bears.

**c. State**

The North Dakota State Game Fish and Parks Department manages 15 units used for recreation and wildlife areas along the shores of Lake Sakakawea.

1. Wolf Creek
2. Audubon
3. DeTroibriand
4. Douglas Creek
5. Deep Water
6. Van Hook
7. Lewis and Clark State Park
8. Lewis and Clark Game Management Area
9. Tobacco Gardens
10. Antelope Creek
11. Beaver Creek
12. Hillie Game Management Area
13. Riverdale Game Management Area
14. Little Missouri State Park
15. Indian Hills

d. National Guard – There are two wet sites on Lake Sakakawea; one near Douglas Creek and one southeast of Williston.

e. Local- There are seventeen out-grant sites leased to county or city organizations.

f. Public Organizations- there are various small out-grant leases to small public organizations.

## **2. Types of Agency Activities That Are Not Likely to Significantly Affect Cultural Resources**

The following routine operation and maintenance activities should produce no significant adverse impacts to historic properties, and do not require prior cultural resource coordination. Stipulations to these activities are also discussed.

**a. Mowing and Controlled Burning**

Mowing and controlled burning at recreation or other areas at Lake Sakakawea should produce no significant impacts.

**b. Pedestrian Trails**

The emplacement of hiking, nature, or interpretive trails intended for pedestrian use will not affect cultural resources as long as:

- the construction of the trail involves mowing with or without the overlay of mulch or other materials;
- the construction of the trail does not involve grading, excavating, leveling of contours, or other surface disturbances;
- the trail is maintained in such a way as to prevent erosion causing impacts to the site; and,
- no construction of stairs, bridges, overlook stations, rest stations, or other structures which would involve substantial ground disturbance is undertaken along the trail.

Trail construction which does not meet the above criteria will be considered an undertaking and the potential effects to archaeological sites will be assessed in consultation with Affected Tribes pursuant to the 2004 PA.

**c. Use of Existing Excavated Areas**

The use of existing borrow pits, former ponds, or other areas which have been previously excavated or dredged require no preliminary cultural resource management work as long as the effects of the undertaking are not extended into previously undisturbed areas.

**3. Types of Agency Activities That Could Adversely Effect Cultural Resources**

The following routine operation and maintenance activities could potentially result in significant adverse effects to cultural resources. Therefore, cultural resource management procedures should be initiated prior to the undertaking.

**a. Cultivation Effects on Archaeological Sites**

Long-term agricultural practices will tend to deflate the upper cultural levels of a site, and blur its internal spatial relationships through plow drag. Each significant archaeological site found in cultivated fields/leases must be evaluated to determine the level of integrity remaining and if continued cultivation will have an effect on historic properties.

**Stipulations**

- If lands exist in the area which has never been plowed, a new archaeological survey of the area should be accomplished prior to plowing in accordance with procedures outlined by Sections 106 and 110 of the NHPA (Section VII). However, no areas potentially leased for agricultural purposes remain un-inventoried.
- Any sites which are found to be significant or eligible for nomination to the NRHP will be removed from agricultural production.



**b. Facility Construction**

This class of impacts includes the construction or enlargement of large scale projects. It includes structures, and any grading or land alteration associated with the development of campgrounds, roads, beaches, picnic areas, playgrounds, sanitary facilities, fishing docks, boat ramps, and similar facilities.

**c. Right-of-Way Easements**

The construction of water/gas pipelines and utility power lines generally require narrow easements, which could affect all or part of an archaeological site. Because of the depth of the excavations required to bury pipelines and power line foundations, and the workspaces and spoil areas involved in their construction, they can cause significant damage to sensitive cultural areas.

**d. Reforestation**

Tree planting may occur in areas that are slated for reforestation, erosion control, or habitat restoration. The planting of trees involves activities that could seriously disturb archaeological sites, such as the removal of existing vegetation and deep plowing to prepare the bed for seedlings.

**e. Equestrian Trails and Off-Road Vehicular Use**

The use of a trail by horse riders can result in damage to the contextual integrity of an archaeological site because it results in disturbance to the topsoil matrix of any remains, especially during wet conditions. Similarly, off-road vehicular traffic can adversely affect the topsoil of an area by causing ruts and loss of vegetation.

**f. Road and Parking Area Construction**

The construction of roads and parking areas involves grading, leveling, and excavation that could damage the upper cultural strata or, potentially, the entirety of an archaeological site(s) or the viewshed of historic properties.

**g. Shoreline Modification**

Because the emplacement of rip-rap or other erosion control and bank stabilization techniques along the shorelines usually involves prior ground slope preparation that may alter the original ground surface and because numerous sites are known to exist along the shoreline, these activities could result in adverse effects to historic properties.

**h. Other Earthmoving Activities**

The excavation of soil for fill dirt (borrow pits), construction of ponds, leveling of contours, and dredging, is very destructive to archaeological sites because they remove the soil matrix of cultural remains and destroy the contextual integrity of the deposits. Dredging along the shorelines could affect archaeological sites that were inundated, but may retain intact deposits, as a result of the impoundment of the river. Furthermore, the emplacement of large amounts of fill or soil for the construction of levees and dikes can also adversely impact archaeological sites because the weight of the soil can cause compression-related damage to cultural remains.

## **B. IMPACTS TO CULTURAL RESOURCES**

The protection of historic properties requires an awareness of the natural and human impacts which threaten their integrity. In 1981, a two-volume report on a 5-year, multi-disciplinary study was published by the National Park Service (NPS) that investigated the direct and indirect impacts

affecting archaeological sites due to freshwater inundation and the construction of lakes (Lenihan *et al* 1981). In 1989, a condensed summary of the findings of this study was sponsored by the Corps under contract with the U.S. Army Engineer Waterways Experiment Station (WES) (Ware 1989). The following discussion presents the major points of this effort. As presented by Ware (1989), the study identified three categories of general impacts to cultural resources at lake projects: mechanical, biochemical, and human.

## **1. Mechanical Impacts**

Mechanical impacts are the physical processes associated with a large body of water, such as erosion and deposition, including saturation and slumping. Wave action is the primary impact to cultural resources in lakes, and is created primarily by wind, but also by powerboat wakes. These “wind” and “wake” waves do affect particulate solid materials (soils) in the deeper areas of the reservoir, but are most destructive in the shallow, near shore zone. In this area, the waves remove the fine silty material to deep water and transport the heavier fractions to offshore shoals. As these shoals build, the wave action near the shore decreases and erosion rates decline. This process serves to limit erosion in lakes that maintain a stable pool level. However, at lakes with fluctuating pool levels which are drawn down seasonally, the off-shore shoals themselves are subject to erosion, and the wave action near the shore again increases proportionately. Such lakes never achieve a stable shoreline profile, and archaeological sites along the shoreline are therefore at a continuous risk of degradation.

### **a. Sheet Erosion**

The erosion of sites can occur as a sheet action across the surface of an archaeological site and strip the topsoil and culture-bearing strata. Sheet erosion is generally a shallow to moderately deep erosion, created by wind or water action, of a broad area such as a terrace. This process commonly results in the exposure of features that intruded into the subsoil. Sheet erosion occurs on slopes of a gentle to moderate gradient, and may affect an entire site at one time, eliminating partial to entire horizontal strata within the site.

**Suggested Mitigative Actions** - Construct a protective levee or barrier along the shoreline to prevent erosion of cultural material.

### **b. Shear erosion**

Along a shoreline that is steep, erosion cuts away vertical portions of the archaeological site that is situated along it. Undercutting results in slumping of the upper portions of the bank, cutting gradually into the site. In contrast to sheet erosion, only a portion of the site is affected at a given time. A 1989 WES report of a shoreline erosion study has shown that bank erosion may be a more significant threat to archaeological sites than previously imagined (Ebert, Camilli, and Wandsnider 1989:117). The study shows that the rate of bank erosion and retreat do not slow down or level off after the initial filling of the lake, but continue to be relatively constant over time.

**Suggested Mitigative Actions** - Stabilize the shoreline and/or provide off-shore shoals.

### **c. Siltation**

Soils carried in solution by a stream are deposited in a fan shaped area as the stream waters meet the standing lake water. Sediments are also derived from shoreline

erosion, and deposited downstream. The deposition of these sediments over cultural remains, especially on the down river portion of the lake where they tend to accumulate, can serve to protect archaeological sites as it adds a protective buffer from mechanical impacts at the site's surface. There have been few studies on the impact of deep burial in lakes on archaeological sites. There is one area of concern, however, related specifically to sediment saturation, slumping, and creep. Subaqueous landslides and sediment shifts have been documented in lakes, especially upon the initial submergence. These processes can destroy the contextual integrity of any intact cultural remains.

**Suggested Mitigative Actions** - Mitigative actions are undetermined.

**d. Sediment Shift**

In relation to the combined effect of erosion and siltation, it has been noted that wave action can result in the lateral movement of sediments across an archaeological site, alternately exposing and covering features. The shift can result not only in a loss of contextual data, but can mask the presence of sites during shoreline reconnaissance. The secondary deposition of sediments containing small artifacts such as chert flakes can also result in the apparent "creation" of a "site" where none previously existed.

**Suggested Mitigative Actions** - Use the above techniques to control erosion.

## **2. Biochemical Impacts**

The concern with biochemical impacts relates to the effects of the chemical and biological composition of the lake on the preservation of various archaeological materials. Acidic conditions typify the anaerobic lake bed surface in most lakes and studies show that bone deteriorates in relation to the acidity of the water. Ceramics were shown to preserve well, as were chert artifacts. Wood deteriorates rapidly in water, and shell is also likely to be adversely affected by long-term inundation. Seeds and pollen were rapidly affected by inundation in controlled experiments (see Mathewson 1989). The chemical and biological composition of the water depends upon the interrelationships of numerous factors (climate, evaporation, geology, biota, and pollution). Conditions also vary within the lake depending upon the depth of the water. In deeply buried sediments, which are anaerobic, preservation conditions should be ideal, but there have been few studies, which examine the effects of anaerobic burial on archaeological materials. Along the shallower shoreline, where waters are oxygenated, preservation is likely poor.

**Suggested Mitigation Actions** - Perform data recovery in shallow areas.

## **3. Human Impacts**

This category includes impacts related to human activity. These activities range from such direct impacts as construction and archaeological site vandalism to indirect impacts associated with changes in land use.

**a. Construction**

There are direct and indirect impacts on cultural resources which result from construction activities associated with continuing operation and management of the project area.

**Suggested Mitigation Actions** - Consider and plan mitigation of historic properties as early as possible in the Planning Phase of a proposed undertaking.

**b. Vandalism**

The intensive and regular collecting of artifacts along the shoreline, especially during the winter draw down period, is a constant threat to archaeological sites. Vandalism may occur on various levels, from the occasional, fortuitous find of an “arrowhead” on the ground surface, to regular systematic surface collecting by local amateur archaeologists, to concerted digging and looting by pothunters, and finally to indiscriminate defacement or destruction of archaeological remains. All of these activities affect the cultural resources and their potential for providing data for the interpretation of the local prehistory and history.

**Suggested Mitigation Actions** - Preventive measures such as expanded, strict law enforcement, monitoring and public education should be continued or implemented to prevent this activity from remaining a significant problem. In addition, fencing, planting barrier vegetation such as thorns, placement of signs warning looters of penalties and other measures to protect sites from vandalism should be implemented.

**c. Improved Access**

While improved access is not in itself a direct impact to historic properties, the construction of new roads, hiking trails, and boat ramps would provide access routes to areas that were previously seldom visited.

**Suggested Mitigation Actions** - Plan for site camouflage using accepted techniques. Develop recreation areas away from sensitive areas and provide protective barriers (fencing). Place signage describing laws and penalties at points of access; develop and emplace signage for 800 looting hotline; widespread public education efforts to warn public about looting and vandalism.

**d. Land Use Changes**

The modified face of the landscape may result in changes to land use. For example, in rural areas where lakes are most commonly located, the patterns of livestock grazing may be altered. The pasturage of livestock near the water's edge can lead to serious impacts to archaeological sites, including denuding the land of protective vegetation, trampling and breaking artifacts, confused stratigraphy, and disturbance of structural walls, among others.

**Suggested Mitigation Actions** - Significant historic properties must be considered early in the Planning Phase to allow for construction of protective barriers. Changes to existing agricultural and livestock leases need to be implemented for those leases where use is impacting sacred or cultural resources.

#### **4. Impact Zones at Lake Projects**

The severity of impacts varies according to the location of the cultural resources in relation to the Lake Sakakawea project area. Lenihan devised a scheme, which categorized the lands at lake projects into five impact zones relative to potential effects to historic properties (Lenihan, et al. 1981). Impacts to archaeological resources throughout the lake project area are known to change through time within each of these impact zones.

**a. Conservation Pool Zone**

The permanent, conservation pool zone consists of the permanently inundated portion of the lake below the average annual draw down pool level. At Lake Sakakawea, this is 1,854 feet above mean sea level. There is little data on the impacts to sites within the conservation pool. Initially, human impacts embracing a range of construction-related activities predominate. The severity of the wave impacts will depend upon the vegetation cover. If the slope of the basin is steep the impact will be greater. Vegetation, especially a cover with a dense understory of grasses or shrubs, buffers the initial impact. Archaeological resources that survive will likely be buried under sediments as biochemical impacts become operative. Anaerobic conditions may enhance long term preservation. The remains are subject to decomposition until such conditions develop. The deeper the water, the more likely it is for anaerobic conditions to develop. As the lake ages, subaqueous slump and sediment shift may deteriorate the contextual integrity of a site. In the event of a severe drawdown, the lakebed is highly subject to erosion and human activity due to its vegetation free state.

**b. Shoreline Fluctuation Zone**

The shoreline fluctuation zone is that portion of the lake area exposed to periodic fluctuation due to the seasonal lowering (fall) and elevation (summer) of the lake pool levels. At Lake Sakakawea, the normal pool level is 1850 feet AMSL. Considerable documentation exists relative to impacts within the fluctuating of pool zones because of its high level of visibility (see Lenihan et al, 1981; Mathewson 1989). All types of impacts to cultural resources are increased along the shoreline fluctuation zone, with wave action posing the most serious problem. Fluctuating lake pools enlarge the area affected by wave action. By increasing the beach area, or the area along the shoreline that is free of vegetation, the waves strike soils that are already saturated and unprotected. Furthermore, they become subject to wind and water run-off erosion. The degree to which an area is affected depends upon several factors, including geomorphology. If the area is steep, the development of erosion cutbanks, undercuts, and subsequent slumping is likely. On slopes with a lesser gradient, sheet erosion is more likely. These activities can dislodge and transport artifacts exposed by erosion. The alternate wetting and drying of cultural deposits also has an adverse affect. Controlled studies have shown that these effects occur after only a few exposures. Biochemical effects are also intensified along the shoreline due to the higher light, dissolved oxygen levels, and ambient temperatures that provide suitable habitat for organisms that decompose organic cultural materials. Due to increased access, the risk for human related impacts is also greater. It is along the shoreline that most recreational facilities are located (beaches, boat ramps, campgrounds). Because of decreased or absent vegetation in the fluctuating shoreline zone, cultural remains are highly visible.

**c. Upper Flood pool Zone**

The upper flood pool zone consists of the area above the elevation of 1850 feet AMSL, or the summer pool level, not normally inundated, but which is subject to periodic inundation at the maximum flood stage. The same littoral impacts that endanger sites within the fluctuation zone affect sites within this zone. Although these impacts may be less severe than those to sites within the fluctuation zone, they can nonetheless be very damaging to archaeological resources. Much of the impact results from improved access and changing land use patterns.

**d. Backshore Zone**

The upland or backshore zone consists of the upper, non-inundated reaches of the lake watershed. No direct mechanical or biochemical impacts occur relative to the lake itself in the backshore zone. Impacts in this area are most commonly associated with newly available access to previously seldom visited areas, recreational and commercial development of the lake area, and changes in land use patterns. Other impacts to this area, however, include cultivation and animal grazing patterns.

**e. Downstream Zone**

The downstream zone, comprises that area below the dam which is affected by the release of water (Lenihan, et al. 1981). Mechanical impacts in this zone result in possible changes from an aggrading stream to a degrading one by such actions as the construction of a silt trap. There may also occur changes in water quality downstream after inundation of a stream. Human impacts result largely from recreation activities, irrigation, power generation, and settlement.

## **C. LAND USE CLASSIFICATION AREAS**

For more efficient management of the Corps property at Lake Sakakawea, a series of MUs were established. The land use locations/classifications were established in the Master Plan in accordance with guidance set forth in ER 1120-2-400, Change 3, dated February 12, 1976. These allocations have been changed by ER 1130-2-435, dated December 30, 1987, and are currently defined by EP 1130-2-550, dated November 15, 1996. The Corps does not manage all these properties. Each land use classification is discussed below, including archaeological sites, management agencies, and restrictions.

Most of the management units at Lake Sakakawea contain cultural resources. The NRHP status of sites recommended for evaluation must be determined if there are planned or required objectives and management practices presented that may or actually will have an impact on the sites. The Lake Sakakawea Operational Management Plan (OMP) should be consulted for specific activities in each Management Unit. In the discussion of Management Units below, the asterisk (\*) indicates that a site is in more than one unit.

Restrictions that apply to the cultural resources in the land use allocation areas are described below. If Standard Restrictions are listed for an area, consult the District CRM staff prior to starting any action. It is important to remember that a possibility always exists of uncovering a previously unreported cultural resource. *Standard Restrictions means that all persons involved in earthmoving activities must be informed that there is a possibility that they may expose previously unreported cultural resources. In addition, they must be informed that they must halt any work around the previously unreported cultural resources immediately and inform the resource staff.* Resource staff involved with any earthmoving activity must be aware of this possibility and the procedure for dealing with “emergency site discovery”. Standard Restrictions apply to those areas with no sites or where the sites are not eligible to the NRHP.

If the restriction, No Disturbance without Coordination, is listed it means that cultural resources sites are located in or adjacent to the land use allocation area that we wish to protect. All activities that include any form of earthmoving in these areas must be coordinated with the District CRM staff/Affected Tribes prior to the start of such activity.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

## **D. REQUIRED FEDERAL ANTIQUITY PERMITS**

Individuals, private contractors, universities, or other institutions proposing to conduct archaeological or other investigations of cultural resources at Lake Sakakawea, must first file an application for an Archaeological Resources Protection Act Permit. This Federal permit was established under the Archaeological Resource Protection Act, approved October 31, 1979 (Public Law 96-95: 93 Stat. 721; 16 U.S.C. 470aa-II) and regulated under 32 CFR 229. Projects proposed on Federal and Native American lands are subject to conditions listed in Appendix A except as provided under the North Dakota Intertribal Re-interment Committee (NDIRC) MOA.

## **E. MITIGATION OF ADVERSE AFFECTS**

Once the effects of agency activities on historic properties are recognized, steps can be taken to reduce or eliminate adverse effects to the significant sites. The known impacts to most sites are listed in Table B, Volume II. Much of the data describing these impacts are dated and will have to be adjusted throughout the life of this document.

### **1. Mitigation Treatment Alternatives**

The mitigation of archaeological sites and TCPs implies an amelioration of impending adverse effects to the resource. Mitigation can take several forms: avoidance, monitoring, protection, or data recovery (usually in the form of excavation). The appropriate form of mitigation for threatened resources is conditioned on numerous factors including the values, needs and interests of Affected Tribes, costs, the feasibility of relocating a proposed development, the site's location within the lake impact zones (conservation pool, fluctuating shoreline, backshore zone, uplands, or downstream zone), and the type of resource (structure, buried site, etc.), among other considerations.

There are four recognized management treatments for avoiding or reducing impacts to historic properties, including archaeological sites, TCPs and standing structures. It is Corps policy that preservation through **avoidance** of effects is preferable to all other forms of mitigation (ER 1105-2-100, Part 7-48).

#### **a. Avoidance**

The avoidance of cultural resources can often be accomplished during the planning phase of a proposed development if an inventory of the sites within the project area has been made through adequate and systematic reconnaissance. It is also possible to adjust a development to avoid a historic property after an undertaking has been initiated. The feasibility of avoidance would depend largely upon the nature of the action. Avoidance implies that no direct impacts from the proposed development affect the site. With avoidance, no secondary or indirect impacts are usually foreseen or prevented.

#### **b. Monitoring**

Monitoring and consultation with the Three Affiliated Tribes and any other Affected Tribe serves several purposes in cultural resource management. First, recorded sites should be inspected at appropriate intervals in order to determine the presence and

extent of any existing impacts. Secondly, significant sites that have been protected by some means or technology should be monitored in order to assess the effectiveness of the protective measures. Finally, monitoring is recommended when construction is ongoing in order that no adverse effects are imposed on unknown archaeological resources or other culturally significant areas. Several standardized forms have been prepared for use during monitoring which provides quick and efficient documentation of impacts to archaeological sites.

Sites determined to be eligible, or for which eligibility to the NRHP is undetermined, should be monitored on varying schedules, dependent on the impacts, including erosion potential, at each site. Those sites situated on cutbanks or other eroding surfaces such as road cuts should be monitored or visually inspected each fall when the lake is at its lowest elevation. Members of the Lake Sakakawea Enforcement Team (federal, tribal and state law enforcement and game wardens), each time they are in the vicinity of these sites, should visually inspect them and report their observations on a standardized form. In the instance of a flood episode, these threatened sites should be visually inspected once the pool level has returned to normal. Inundated sites are exempt from this monitoring schedule unless there is a draw down or reduction in pool level that may reveal these sites. Sites listed on the NRHP or considered eligible or unevaluated and threatened by erosion include:

Those sites listed on the NRHP and those considered eligible or unevaluated that need to be monitored for vandalism or artifact collecting include those reported to be impacted and those in recreation areas. These sites are:

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

**c. Protection**

*Protection means the actual installation of a structural or nonstructural material on an archaeological site or the completion of some activity designed to prevent or to mitigate the adverse effects of natural or cultural processes.*

**Stabilization** - *Stabilization means the effective mitigation of those adverse effects as a result of applying an appropriate and effective protective technology. Stabilization of sites is less of a reactive measure in resource management because it follows a carefully planned schedule (Thorne 1988:8). Stabilization can be considered an alternative action under ER 1130-2-438.*

**Preservation Technology** - *Preservation technology refers broadly to any equipment, methods, and techniques that can be applied to the discovery, analysis, interpretation, restoration, conservation, protection, and management of prehistoric and historic sites, structures, and landscapes.*

**d. Data Recovery**

In the event that preservation or avoidance prove to be unsuitable, data recovery through excavation accompanied by documentation is the usual means of acquiring data and thereby mitigating the loss of a resource. The data recovery efforts must (1) be done in consultation with Affected Tribes and (2) meet Federal standards as outlined in The Secretary of the Interior's *Standards and Guidelines: Archaeology and Historic Preservation*, Federal Register, Volume 48, No. 190, 1983, and guidelines for



archeological investigations prepared by the SHPO. Data recovery is generally opposed by the Tribes in the Missouri River Basin.

## **2. Treatment Alternatives at Lake Sakakawea**

In the past, mitigation in the form of data recovery has been seen as the preferable solution when avoidance was not feasible. Today, a position of preservation is more widely embraced and, depending upon the location of the resource in respect to lake impact zones, has been shown to be generally less expensive than data recovery. Corps sponsored studies have generated the following conclusions relative to treatment alternatives within the impact zones at lake projects:

- **Conservation Pool**

Sites located below the surface of the lake are protected from their exposure to wave action, the most serious source of erosion. *In situ* protection is recommended for sites below the shoreline.

- **Fluctuating Shoreline**

Bank stabilization has been successfully implemented to protect archeological sites adjacent to the Missouri River Main stem Lakes. Bank stabilization measures used by the Omaha District have included conventional rock riprap and a more innovative system of vegetative bank stabilization. Affected Tribes in the Basin support bank stabilization for this purpose. The Corps has worked together with members of the Cheyenne River Sioux Tribe and Lower Brule Sioux Tribe on vegetative bank stabilization (Brodnicki 2000).

- **Backshore Uplands**

*In situ* preservation is probably the only practical alternative in the backshore uplands. The active protection of sites in this zone has been called the “most important long-term cultural resource management responsibility of reservoir managers” (Ware 1989:32).

## **3. Protective Measures**

The natural aging process of sites will always exist and is related to environmental conditions (Thorne 1988:6). However, actions such as erosion forces, looting, and vandalism can be reduced and should be addressed in preservation planning (Thorne 1988). The routine monitoring of archaeological sites is required in order to determine the nature and extent of adverse effects. Once the impacts are understood, protective measures and technologies are available to eliminate or reduce these impacts. Studies conducted through the WES deal with archaeological site preservation, and provide useful data and guidelines for stabilization techniques and their effectiveness. References for these reports are provided in Section VIII, Bibliography. Examples of the preservation measures discussed in these reports include the following:

- Bank stabilization in areas of known archaeological sensitivity
- Re-vegetation of areas of heavy public utilization for soil stabilization
- Fencing or other barriers

- Site camouflage techniques
- Non-destructive land-use practices
- Emplacement of signs regarding illegality of site looting
- 800 report looters hotline
- Law enforcement team at Lake Sakakawea, comprised of federal, tribal and state law enforcement officers and wildlife personnel
- Public education

Techniques and successful results from projects utilizing the above methods such as these are also reported in **The Archeological Sites Protection and Preservation Notebook** (U.S. Army Corps of Engineers Waterways Experiment Station 1992). These studies by the Corps have shown that cost-effective means of site preservation can be attained. However, each case must be individually examined to determine the proper alternative treatment. All stabilization projects of significant sites must be coordinated with the District Archaeologist, the SHPO, THPO(s), and Affected Indian Tribes.

## V. ACTION PLAN

This section details the Action Plan, which is comprised of 1) a series of Tasks which must be completed in order to meet NHPA compliance requirements; 2) cultural resource management Procedures for accomplishing these tasks; and 3) Priorities for the conducting of required cultural resource investigations.

### TASKS

The following eight tasks comprise the Action Plan.

Task 1 -- Survey of historic properties including traditional cultural properties.

Task 2 -- Testing and evaluation of historic and cultural properties.

Task 3 -- Nominate significant cultural areas and historic properties as evaluations dictate.

Task 4 -- Develop a monitoring schedule and monitor site integrity threats.

Task 5 -- Preservation of eligible and unevaluated cultural resources.

Task 6 -- Conduct Corps staff and Native American monitor training and implement CRMP procedures.

Task 7 -- Integrate CRMP objectives into Master Planning and Operational Management Planning (OMP) processes.

Task 7 -- Enhance public education in consultation with Affected Tribes.

Task 9 -- Conduct bi-annual update, review, and coordination meeting with Affected Tribes, THPOs and SHPO.

#### **1. Task 1 -- Survey of Historic Properties Including Traditional Cultural Properties**

Many of the cultural resource surveys undertaken for Lake Sakakawea have been carried out with little or no tribal input. If there was tribal input, it rarely appears in the cultural resource reports or associated documentation. This is not to single out the Lake Sakakawea inventories for their lack of tribal input. Up until the last 10 years, most of the cultural resource management undertaken across the United States was accomplished without tribal participation. That is rapidly changing and this is no less true for Northern Plains tribes. Future cultural resource surveys need to encourage and employ the active participation of tribal members for the file and literature search, native oral history and traditional cultural property information, fieldwork, lab work, and report preparation.

Any intensive, 100 percent, cultural resource inventory of the shoreline making up Corps lands on Lake Sakakawea would require a formidable effort and expense. Clearly, such an undertaking would require a long-term commitment entailing a number of native and non-native personnel, field seasons, and reports chronicling the results of such a significant study. This inventory data would be used in conjunction with previously collected oral history and

contemporary testimony gathered during the TCP surveys. Further consultation with the Affected tribes may develop the strategy (i.e., research design) for designing, funding, and executing such a multi-year project employing native and non-native personnel. Two survey crews of three people each in an average field season (May - September) may inspect about 100 miles of shoreline for cultural resources. Although this field data would be processed daily, there would still be several months, if not all winter, needed to adequately write-up the results before the start of the next field season.

In the case of TCP evaluations, these studies shall be carried out by the Mandan, Hidatsa, and Arikara Nation in consultation with Affected Tribes, THPO/SHPO and ACHP, and/or Tribal Archeologists. Except for TCP surveys, guidelines and qualification requirements for conducting such investigations are found in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register/Vol. 48, No. 190, Thursday, September 29, 1983), and Guidelines for Archaeological Investigations prepared by the North Dakota SHPO. Information from this step will provide criteria in developing the overall priorities for future protective measures on sites.

## **2. Task 2 – Testing and Evaluation of Historic and Cultural Properties**

Evaluation of sites identified in earlier studies as potentially eligible or unevaluated needs to be completed to determine, by testing, if these sites are eligible for the NRHP. The evaluation may include limited excavation to determine significance and site boundaries and must be coordinated with the Affected Tribes. Some other forms of evaluations may be substituted for subsurface testing at the request of the Affected Tribes and/or THPO/SHPO. These investigations must be conducted by a qualified archaeologist in pre-decisional consultation with the Affected Tribes, THPO/SHPO and other interested parties.

A total of 1222 sites considered unevaluated against the NRHP criteria of significance and requiring additional testing are listed below in a tabular summary. Ninety-six of these sites are currently inundated and will remain unevaluated as long as the lake remains and are not included in the list presented below. Unevaluated sites, listed in Chapter 4, Section G, are found in terrestrial settings and can be evaluated by standard procedures. Priorities were developed based on the comprehensive value of the site and how seriously the site is endangered; more important or more seriously endangered sites have higher priority than others. Decisions regarding the priority of sites will be reached in a pre-decisional consensus-style meeting with Affected Tribes, SHPO, ACHP, and other interested parties as necessary to ensure that all values for an endangered site are taken into consideration.

## **3. Task 3 - Nominate Sites for Listing to the National Register of Historic Places**

Any cultural resources on Lake Sakakawea property found to be significant to the understanding of the history or prehistory of the area or which are found to have spiritual significance to Affected Tribes must be nominated for listing to the NRHP. There are no NRHP listed sites in the project area. A total of 16 archaeological sites and one historic architectural site, listed below, are considered eligible and should be nominated to the NRHP. More sites may be added to this list from the list for Task 1 after those sites have been evaluated.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

#### **4. Task 4 – Site Monitoring**

District personnel, contractors and partners in the Enforcement MOA to the 2004 PA will monitor various threats to the integrity to cultural resources on a routine, scheduled basis. Of the known sites at Lake Sakakawea, each of them must be monitored at least bi-annually to determine any impacts that have occurred or are likely to occur. Of this number, 53 sites must be initially be monitored semi-annually due to the potential for looting due to artifact scatters, rapid erosion, proximity to high use areas, etc. These sites are listed in Table V-2. An additional 16 sites are eligible or on the national register and must be monitored semi-annually. These sites are listed in Table V-1. Of the total number of sites, 415 must be monitored on an annual basis (see Table V-3), and the remaining sites monitored on a bi-annual basis. The monitoring schedule can be revised based on the results of the initial monitoring, but not without pre-decisional consultation with the Affected tribes.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

#### **5. Task 5 -- Preservation of Eligible and Unevaluated Cultural Resources, Including Traditional Cultural Properties.**

Protective measures will be developed for those sites identified in the previous steps as listed or eligible for the NRHP or those considered sacred or culturally important to the Affected Tribes. A detailed examination of eligible sites will be made to accurately determine and document the current condition and make field measurements and plans of the sites for preliminary engineering studies. This information will then be used to develop a priority plan for any protective measures on these sites. Protective measures include bank stabilization, increased presence by monitoring partners to discourage and prevent looting, fencing, and a comprehensive public education campaign to be developed in pre-decisional consultation with Affected Tribes. Engineering studies will be done to define feasible alternatives for site preservation. The following table identifies sites that are culturally important to an Affected Tribe or eligible or unevaluated for the NRHP and suggests protective measures. Some sites have already been or are partially stabilized, including Crow Flies High Butte, Nishu Bay, and the Wash Family Cemetery.

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

#### **6. Task 6 -- Conduct Staff Training and Implement CRM Procedures**

The staff at the Lake Sakakawea Project Area office shall attend training sessions regarding historic preservation activities. Adherence to the Action Plan can only be accomplished with the informed assistance of District and Tribal resource personnel. This training should include the following:

- An overview of the regional prehistory and history.

- A discussion of the types of historic properties present in the Lake Sakakawea Project Area.
- An explanation of the criteria for determining site significance.
- Summary descriptions of the historic properties in the Lake Sakakawea Project Area.
- Impacts to historic properties and the people whose ancestors created them from current land use practices in the Lake Sakakawea Project Area.
- Alternative treatments for mitigating impacts.
- An outline of cultural resource management procedures.
- Cultural awareness training encampment – All of the above, but from the viewpoint of the Affected Tribes. Also, activities designed to expose participants to the lifeways, customs and values of Affected Tribes to gain a better understanding as to why sacred and cultural resources in Tribal homelands are so important to Affected Tribes.

Following this training, CRM procedures should be immediately implemented through the coordinated efforts of the Affected Tribes, the cultural resources program manager, and the staff archaeologists.

## **7. Task 7 -- CRMP Integration With Corps Planning**

The cultural resource management objectives contained in the CRMP should be incorporated into the project Master Planning and Operational Management Plan (OMP) processes as soon as feasible. The information contained and the principles detailed in the 2004 PA will also be incorporated into this CRMP. The five-year plan for the routine operation and management of the Lake Sakakawea Project Area should be modified to include all pertinent sections of the 2004 PA, including but not limited to, direct, pre-decisional Tribal consultation, staff training, site monitoring and enforcement of Federal preservation laws, inventory/evaluation, site protection, and the enhancement of interpretive programs through consultation with Affected Tribes. This plan and the PA will require pre-decisional consultation with the Affected Tribes and will enable the earliest possible consideration of sacred, cultural and archaeological resources in the planning stage of proposed activities, and ensure that cultural and historic properties are not inadvertently neglected or destroyed as a result of routine Corps operation and maintenance activities.

## **8. Task 8 – Enhance Public Education**

ER 1130-2-540 authorizes the preparation of brief but informative brochures, slide shows, or other media documentation for public presentation relative to historic preservation activities that may be of particular interest to the public. According to ER1130-2-540, District Commanders should encourage the public use of historic properties under their jurisdiction through such means as restoration and public use of historic buildings and properties, including archaeological sites, through educational displays, media shows, interpretive programs and brochures, signage, or similar means. Affected Tribes will be equal

participants in planning for and carrying out any public education program or project that discusses the cultural and environmental resources of the Lake Sakakawea Project Area.

- The public is in general uninformed about the significance of cultural and archaeological sites and the non-tangible types of data that can provide valuable information to archaeologists. More importantly they are unaware of the cultural significance these cultural areas or sites may have for the Affected Tribes whose ancestors lived in these areas and created what is often referred to as archaeological sites. A program of education concerning the need for leaving cultural areas, archaeological sites, and material remains undisturbed is critically needed and strongly recommended.
- While the removal of artifacts from archaeological sites or vandalism of sites on federally owned or managed properties is prohibited by various laws and regulations (see Section II.A.), most people are unaware of these laws and the potential penalties that they carry. For this reason, the emplacement of signs, the preparation and availability of pamphlets, brochures, etc., should be accomplished. Furthermore, the public should be made aware that cultural sites will be monitored for unauthorized activities and 1-800-Report-Looters signs should be posted at recreational areas, convenience stores, or wherever recreational users of the Lake gain access to the shoreline.
- An interpretative plan, in consultation with Affected Tribes, will be developed to guide production of interactive programs in addition to upgrading and adding new hands-on and outreach programs that tell the history of the River and the indigenous peoples who have always called the River home.
- An educational program on the river itself may also be added to the educational themes, focusing on the natural resources presently at Lake Sakakawea and those inundated/destroyed by the construction of the Garrison Dam.

Specific text concerning this task is also provided in the 2004 PA and will be complied with under this CRMP.

## **9. Task 9 – Bi-Annual Update, Review and Coordination Meeting**

A bi-annual meeting will be held at the Garrison Dam Project Office at Lake Sakakawea. The Affected Tribes and the Corps personnel participating in this meeting will be representatives of the parties who participated in the drafting of the Lake Sakakawea CRMP. The meeting will focus on updating the CRMP, reviewing the effectiveness of the CRMP, and coordinate any events, training, policy or procedure changes or updates associated with the cultural resources of the Lake Sakakawea Project Area.

## **CULTURAL RESOURCE MANAGEMENT PROCEDURES**

The following procedures have been developed to insure all project operations are in compliance with Federal and state legislation and guidelines protecting cultural resources. These procedures must be followed by all Corps personnel during the planning phase for any land altering activity.

### **1. Procedures for New Projects**

When Corps staff initiates any project which will result in land altering activities, they should (1) determine the area of potential effect (APE) of the undertaking; (2) determine if the APE has been surveyed for historic properties; and (3) contact Affected Tribes to initiate pre-decisional consultation with the above information. If the APE is known to contain historic properties, discussion of ways to avoid impacts to those properties is held. If the APE has not been surveyed, or if existing surveys are more than 20 years old, the following procedures will be carried out:

**a. Procedures for Non-surveyed Areas**

Monitoring of cultural resources will be an essential element of the Lake Sakakawea CRMP. Whenever an action, project, activity, or program is planned in an area that has not been previously surveyed or resurveyed since 1992 or contains known cultural resources:

- 1) The Project Area Manager shall notify the Tribal Cultural Resource staff and/or Archaeologist, Tribal Monitor(s), and District archaeological staff. District staff will coordinate the undertaking with the THPO/SHPO and the ACHP.
- 2) If no cultural resources or sacred sites are located within the APE as a result of the survey/evaluation required by Section 110 (a)(2) of the NHPA of 1966, as amended (1992), the District Archaeologist will provide appropriate documentation to the Affected Tribes, THPO/SHPO and the ACHP. Upon the concurrence of these parties of these negative findings, the project may proceed.
- 3) If historic properties or sacred sites are identified within the undertaking's APE as a result of the survey required by Section 110 (a)(2) of the NHPA of 1966, as amended (1992), then Section 106 consultation procedures to avoid impacts will be initiated and completed by the District Archaeologist in consultation with the Affected Tribes, THPO/SHPO, and the ACHP before the project can proceed.

**b. Procedures for Areas Surveyed After 1992**

Whenever an action, project, activity, or program is planned in an area that has been previously surveyed for historic properties, the Project Area Manager, the Affected Tribes and/or Tribal archaeologist, Tribal monitor(s), and District archaeological staff will:

- 1) Determine from the maps if the APE contains any recorded historic properties and if the survey was conducted after 1992.
- 2) If, upon concurrence of Affected Tribes, THPO/SHPO and ACHP, no historic properties or sacred sites exist within the APE of the undertaking, the project may proceed.
- 3) If the area does contain historic properties or sacred sites, the Project Area Manager, Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), ACHP and District archaeological staff shall determine if adverse effects would occur to the historic property as a result of the proposed activity. If the property will be adversely affected, the Project Area Manager, in consultation with the parties listed above, should determine if feasible alternatives exist for



the proposed undertaking, or if an alternate means of conducting the undertaking is available, so that potential effects to the historic property can be avoided.

- 4) If the effects to the historic property can be avoided, or if existing properties will not be adversely affected, the District archaeological staff will submit appropriate documentation to the above parties, and upon concurrence, the project may proceed.
- 5) If potential effects to the historic properties cannot be avoided, the Project Area Manager shall notify the Project Area Manager, Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), ACHP and District archaeological staff that the area of the proposed undertaking could potentially affect historic properties. The Project Area Manager, Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), ACHP and District archaeological staff will review existing information to determine if it is adequate for reliable decision-making. If the information is not adequate, procedures defined in Section 110 of the NHPA (evaluation) shall be implemented. If the sites are found to be significant, then the Section 106 review process shall be initiated and completed by the District archaeological staff in consultation with the Project Area Manager, Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), and ACHP.

## **2. Unanticipated Discoveries**

When an archaeological site or TCP is discovered prior to or during an undertaking, or during routine operation and maintenance, the Project Area Manager should take the following steps:

- a. Halt all work in the vicinity of the discovery. All reasonable steps should be taken by the Project Area Manager to ensure the discovery is protected and undisturbed until it can be assessed by the Project Area Manager, Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), ACHP and District archaeological staff. The site should be assumed to be eligible for listing in the NRHP and protected until a formal determination of eligibility can be made.
- b. The Project Area Manager will notify the Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), ACHP and District archaeological staff.
- c. If the find is determined to be significant through consultation with the above-named parties, Section 106 procedures must be initiated. The District Archaeologist will coordinate this process with the Project Area Manager, Affected Tribes, THPO/SHPO and/or the Tribal archaeologist, Tribal monitor(s), ACHP and District archaeological staff.

## **3. Discovery of Human Remains**

As a result of a Memorandum of Agreement signed by Tribal and Omaha District representatives, specific procedures for the protection, preservation, and disposition of human remains, associated burial goods, and the locations in which they are found on Omaha

District lands, have been developed. Those procedures, as presented below, will be followed when any of the conditions of the NDIRC MOA are met.

**a. Procedures When Remains Are Inadvertently Disinterred**

- 1) Upon being notified of actual or potential disturbances of human remains or burial goods, the Omaha District Emergency Operations Center shall notify the appropriate contacts of the Affected Tribes and NDIRC.
- 2) The District will also inform the State Historical Society and the State Department of Health and Consolidated Laboratories as to the exact location and condition of the remains and burial goods for which notification was received for their assistance in possible identification of the deceased.
- 3) If the Omaha District, Affected Tribes, or the NDIRC have reason to suspect that the burial may be of a recent prosecutable crime or accidental death, a local law enforcement officer shall be notified. Otherwise, no other specialists may be allowed to examine the human remains, except as provided below.

**b. Procedures for Study When Human Remains Are Inadvertently Disinterred**

- 1) Within a period of two business days or less from the time of notification of actual or potential disturbance, the District, Affected Tribes, and NDIRC representatives shall initiate examination of human remains not associated or suspected of being associated with a crime or accidental death. Such examinations will be limited exclusively to the following activities:
  - a) Initial examination by the District will attempt to determine the lineal descendents or race and age using relevant and available resources. This examination must be conducted in consultation with the Affected Tribes and NDIRC and in the presence of at least one of NDIRC's members. Examination does not provide for scientific study of the remains or burial items.
  - b) If a presumption of next-of-kin or age and race can be made based upon location, historical data and any associated burial goods, disposition of the human remains and/or associated burial goods must be based on that data.
  - c) Disposition must be made in accordance with NAGPRA and other requirements as provided for in the NDIRC MOA.
  - d) If initial examination determines that the human remains are not non-Indian or non-Tribal, the remains will be examined further within the applicable scope of the study as defined by the NDIRC MOA.
  - e) If it is determined by initial examination that the human remains are Indian, the remains will be examined further within the applicable scope of the study as defined by the NDIRC MOA.

- f) If the initial examination cannot determine whether the remains are Indian or non-Indian it will be presumed that the human remains are Indian based on the experience of the District, Affected Tribes, and the NDIRC.

**c. Procedures for Recovery, Restoration and Reinterment When Human Remains Are Inadvertently Disinterred**

- 1) In consultation with the Affected Tribes, NDIRC, law enforcement and health officials will recover remains determined or suspected to be those of a recent crime.
- 2) Within no more than two business days, Affected Tribes and a NDIRC representative in consultation with the District will make a determination whether the human remains can be adequately and safely restored and protected *in situ*. If this is not possible the remains and burial goods will be completely disinterred and reinterred in another location.
- 3) Use of intrusive archeological identification/testing methods is prohibited.
- 4) Prior to any restoration or reinterment of burial contents the Affected Tribes, NDIRC, and other possibly affiliated Tribes, in consultation with the District shall attempt to determine tribal identity of any remains.
- 5) If it is determined that a disturbed burial can be adequately and safely restored and protected *in situ*, it shall be backfilled, stabilized and protected from the human or natural processes responsible for the original disturbance. These activities shall take place as soon as is practicable after such a determination is made.
- 6) If the burial site can not be adequately restored and protected, the Affected Tribes and NDIRC shall determine, subsequent to the completion of any limited study of the burial contents, the appropriate Indian reservation or other site for reinterment of the burial if lineal descendents can not be established.
- 7) The District will provide the opportunity for appropriate tribal religious ceremonies and fund the expenses of the Affected Tribe and NDIRC members participating in restoration and reinterment ceremonies.

**d. Dispute Resolution**

- 1) All parties described in this CRMP (Affected Tribes, Project personnel, THPOs/SHPO, ACHP) may object in writing to any action of other participants, which does not conform to the province of this document, except where an alternative procedure is provided in this document.
- 2) The parties must consult with each other within 30 calendar days of notification, to resolve disputes or objections.
- 3) If a dispute cannot be resolved, the disputing parties shall agree to meet with a mutually acceptable mediator to attempt to resolve the dispute by consensual agreement.

- 4) The parties will not utilize the court system to resolve disputes, or to otherwise sue to enforce this implementing PA of the Lake Sakakawea CRMP, until consultation and mediation attempts have been exhausted.

**e. Amendments**

- 1) Any signatory to the CRMP may propose amendments, supplements, or revisions to this document by submitting them in writing to the other participants.
- 2) Parties agree to consult with each other in good faith, within 60 calendar days of such notification to consider any such changes.

## **PRIORITIES, ESTIMATED COSTS, AND SCHEDULES**

The following tables provide a list of tasks, a brief justification, preliminary estimated costs and a tentative schedule for the tasks listed in section A of this chapter. Tasks are not necessarily listed in priority order.

### **1. Task 1 – Survey of Historic Properties Including Traditional Cultural Properties**

Table V-5						
Survey						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
1	Survey of the Lake Sakakawea project area including identification of TCP sites.	The cultural resource information is outdated, there is new Federal CRM Legislation including the concept of TCPs, and THPOs have been created since Lake Sakakawea was last surveyed.	N/A	N/A	Resurvey the Lake Sakakawea project area. <b>Estimated Cost: \$2,000 to \$5,000 a mile</b> <b>Approximately 540 miles: \$1,080,000 to \$2,700,000</b>	

### **2. Task 2 – Testing and Evaluation of Historic and Cultural Properties**

Table V-6						
Testing and Evaluation						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year

Table V-6						
Testing and Evaluation						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
2	Testing and evaluation to determine NRHP eligibility of all sites considered unevaluated in previous studies.	1,222 recorded archaeological sites within the project area have not been evaluated against the NRHP criteria of significance or there is insufficient data recorded to determine the NRHP status. These sites will need to be evaluated to determine NRHP status in order to manage these resources adequately. Proposed scopes of work on these sites must be established and approved according to the requirements of this CRMP. The sites to be evaluated are listed in Table B, Volume II, as Undetermined NRHP Status.	N/A	N/A	<b>Estimated Cost per Five Sites: \$2,500</b> Test and evaluate 1,222 sites to determine NRHP eligibility. <b>Cost: \$611,000</b>	

### 3. Task 3 - Nominate Sites for Listing to the National Register of Historic Places

Table V-7						
Nomination						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
3	Nominate sites for listing on the NRHP.	Completion of the nomination process to the NRHP is required under Section 110 of NHPA.	N/A	N/A	<b>Estimated Cost per Site: \$5,500.</b> Nominate 150 sites for listing on the NRHP. <b>Cost: \$825,000</b>	

### 4. Task 4 – Site Monitoring

Pursuant to the Enforcement Section of the 2004 Programmatic Agreement, Enforcement Teams will be developed at each of the reservoirs on the Missouri River to monitor sites and address erosion and vandalism. These Enforcement Teams will consist of: the Project Area field staff, Affected Tribes and/or Tribal archaeologist, Tribal monitor(s), District archaeologists and federal, tribal and state law enforcement and wildlife management staff. This Team will monitor erosion and vandalism at sites that currently appear to be endangered pursuant to procedures detailed in this CRMP.

Table V-8						
Monitoring						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year

Table V-8

Monitoring						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
4	Develop a system for monitoring sites regularly for erosion, looting, vandalism, and agricultural encroachment.	Sites that are on the NRHP or are eligible or unevaluated to the NRHP, as well as sites culturally important to the Affected Tribes, will be monitored regularly.	Mountrail	Multiple	<b>Estimated Cost per Site: \$675</b> Monitor 111 eligible sites and sites with an unknown NRHP status located within Mountrail County. <b>Cost: \$75,000</b>	
			Mercer	Multiple	<b>Estimated Cost per Site: \$675</b> Monitor 79 eligible sites and sites with an unknown NRHP status located within Mercer County. <b>Cost: \$53,500</b>	
			Dunn	Multiple	<b>Estimated Cost per Site: \$675</b> Monitor 88 eligible sites and sites with an unknown NRHP status located within Dunn County. <b>Cost: \$60,000</b>	
			Williams	Multiple	<b>Estimated Cost per Site: \$675</b> Monitor 23 eligible sites and sites with an unknown NRHP status located within Williams County. <b>Cost: \$15,500</b>	
			McKenzie	Multiple	<b>Estimated Cost per Site: \$675</b> Monitor 31 eligible sites and sites with an unknown NRHP status located within McKenzie County. <b>Cost: \$21,000</b>	
			McLean	Multiple	<b>Estimated Cost per Site: \$675</b> Monitor 136 eligible sites and sites with an unknown NRHP status located within McLean County. <b>Cost: \$92,000</b>	

## **5. Task 5 -- Preservation of Eligible and Unevaluated Historic and Cultural Resource Sites**

The preservation of historic properties at Lake Sakakawea as Federally mandated requires the coordinated efforts of Resource Personnel and District Operations and Planning elements. The effective management of cultural resources can be achieved through the implementation of, and consistent adherence to, the objectives outlined in the Action Plan of this CRMP.

- a.** Routine coordination with the Affected Tribes on cultural resource issues by:
  - 1. Consulting with these Tribes on all permits under the Archaeological Resource Protection Plan.
  - 2. Developing interpretive plans for educational programs and events, including update and enhance Lewis and Clark expedition educational program, Lake Sakakawea area history, and program on steamboats in the area. Create interactive educational programs on the river and its ecosystems, past and present.
  - 3. Assisting in providing access to medicinal and edible plants at Lake Sakakawea for Affected Tribes.
  - 4. Coordinating future controlled burns.
  - 5. Conducting a pedestrian reconnaissance study over the entire project.
  - 6. Identifying impacts, study mitigation alternatives, and selecting the best one for banks of eligible and potentially eligible sites.
  - 7. Terminating plowing on sites as required and incorporating into the terms of each lease. Cultivation has been terminated in most, if not all, reported site areas. A visual inspection of the site areas thought to be significant should be undertaken.
- b.** The renovation, destruction, removal or continued deterioration of standing structures or foundations greater than fifty years of age must be coordinated with the District Archaeologist through the Operations Division of the Omaha District. If the structure is found to be a significant local, state, or national resource, the renovation should be coordinated through the District Archaeologist, Affected Tribes, THPOs, SHPO, and ACHP, and follow the Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1983). The area surrounding the structures and features must also be considered as it may contain archaeological deposits relative to the historical significance of the property.

Table V-9

Mitigation						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
5	Preservation of Eligible and Unevaluated Cultural Resources	Protective measures will be developed for those sites identified in the previous steps as listed or eligible for the NRHP or those considered sacred or culturally important to the Affected Tribes. A detailed examination of eligible sites will be made to accurately determine and document the current condition and make field measurements and plans of the sites for preliminary engineering studies.	Mountrail	Multiple	<b>Estimated Cost per Site: \$150,000</b> Stabilize 118 eligible, potentially eligible or unknown NRHP status sites located within Mountrail County. <b>Cost: \$17,700,000</b>	
			Mercer	Multiple	<b>Estimated Cost per Site: \$150,000</b> Stabilize 93 eligible, potentially eligible or unknown NRHP status sites located within Mercer County. <b>Cost: \$13,950,000</b>	
			Dunn	Multiple	<b>Estimated Cost per Site: \$150,000</b> Stabilize 125 eligible, potentially eligible or unknown NRHP status sites located within Dunn County. <b>Cost: \$18,750,000</b>	
			Williams	Multiple	<b>Estimated Cost per Site: \$150,000</b> Stabilize 24 eligible, potentially eligible or unknown NRHP status sites located within Williams County. <b>Cost: \$3,600,000</b>	
			McKenzie	Multiple	<b>Estimated Cost per Site: \$150,000</b> Stabilize 41 eligible, potentially eligible or unknown NRHP status sites located within McKenzie County. <b>Cost: \$6,150,000</b>	



Table V-9

Mitigation						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
			McLean	Multiple	<b>Estimated Cost per Site: \$150,000</b> Stabilize 107 eligible, potentially eligible or unknown NRHP status sites located within McLean County. <b>Cost: \$16,050,000</b>	

## 6. Task 6 -- Conduct Staff Training and Implement CRM Procedures

Table V-10

Training						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
6	Conduct training for tribal, Omaha District, and Garrison Dam Project Area Office personnel and implement CRM procedures.	Training for Tribal, Omaha District, and Garrison Dam Project Area Office personnel will increase the overall success of the CRMP program by teaching them about CRM procedures and emphasizing its importance. See Task 7, page V-16, above for more detail.	N/A	N/A	This training will be developed and offered at convenient times. The estimated cost is approximately <b>\$10,000 per year</b> (based on two days of training for 20 personnel) and will come from the current operational budget for the Omaha District.  <b>Cost: \$10,000 per year</b>	

## 7. Task 7 -- CRMP Integration With Corps Planning

Table V-11

CRMP Integration						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
7	Integrate CRMP objectives into the Master Plan and Operation Management Plan processes.	Combining the information in the CRMP with other documents provides uniform guidance for cultural resource related activities.	N/A	N/A	Garrison Master Plan <b>Estimated Cost: \$5,000</b>  Garrison Operation Management Plan <b>Estimated Cost: \$5,000</b>  <b>Cost: \$10,000</b>	

## 8. Task 8 -- Enhance Public Education

Table V-12

Public Education						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
8	<p>Enhance Public Education Develop interpretative programs jointly with the Affected Tribes on the history of the Lake Sakakawea project area.</p> <p>Develop an interpretive plan for educational programs and events, and other forms of deterrence against looting and vandalism.</p>	Informing the public about the importance of preserving our National Patrimony will insure the overall success of the CRMP program.	N/A	N/A	<p>A draft interpretive plan with the Affected Tribes <b>Estimated Cost: \$15,000</b></p> <p>Interpretative, educational and other similar plans <b>Estimated Cost: \$10,000</b></p> <p><b>Cost: \$25,000</b></p>	

## 9. Task 9 – Bi-Annual Update, Review, and Coordination Meeting

Table V-13

Meetings						
Task No.	Task Description	Justification	Site Number	Unit	Actions and Estimated Costs	Year
9	The Corps personnel and Affected Tribes impacted by the drafting of the Lake Sakakawea CRMP will participate in bi-annual update, review, and coordination meeting.	Bi-annual meetings will be held to ensure compliance is being met, to update the CRMP, review the effectiveness of the CRMP, and to coordinate any events, training, or policy or procedure changes associated with the cultural resources of the Lake Sakakawea project area.	N/A	N/A	<p>A bi-annual meeting will be held at the Garrison Dam Project Area Office, Riverdale, ND, or other agreed upon location for those affected by the Lake Sakakawea CRMP.</p> <p><b>Cost: \$6,500</b></p>	

## CONCLUSIONS AND RECOMMENDATIONS

The protection of historic properties at Lake Sakakawea, as mandated by Federal law, requires the coordinated efforts of Resource Personnel and District Operations, Planning elements, and representatives of Affected Tribes. The effective shared stewardship of cultural resources will be achieved through the implementation of, and consistent adherence to, the objectives outlined in the Action Plan of this CRMP as well as in the 2004 PA.

The cultural resource management objectives contained in the CRMP should be incorporated into the project Master Planning and Operational Management Planning (OMP) processes as soon as feasible. The five-year plan for the routine operation and management of the Lake Sakakawea Project Area should be modified to include staff training, site monitoring, inventory/evaluation, site protection, and the enhancement of interpretive programs, all in consultation with Affected Tribes. This plan will enable the earliest possible consideration of cultural and archaeological resources in

the planning stage of proposed activities, and ensure that historic properties are not inadvertently destroyed as a result of routine Corps operation and maintenance activities.

A bi-annual meeting will be held at the Garrison Dam Project Office at Lake Sakakawea. The Affected Tribes and the Corps personnel participating in this meeting will be representatives of the parties who participated in the drafting of the Lake Sakakawea CRMP. The meeting will focus on updating the CRMP, reviewing the effectiveness of the CRMP, and coordinate any events, training, policy or procedure changes or updates associated with the cultural resources of the Lake Sakakawea Project Area.

The Project Area field staff, Affected Tribes, THPO/SHPO and/or Tribal archaeologist, Tribal monitor(s), and District archaeologists will monitor erosion and vandalism at sites that currently appear to be endangered.

## VI. ACRONYMS

ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act
AMSL	Above Mean Sea Level
APE	Area of Potential Effect
AR	Army Regulations
ARPA	Archeological Resources Protection Act
BIA	Bureau of Indian Affairs
BOR	Bureau of Reclamation
CFR	Code of Federal Regulations
CLG	Certified Local Government
CPT	Central Plains Tradition
CRFC	Cultural Resource Field Coordinator
CRMP	Cultural Resource Management Plan
DU	Dunn County
EC	Engineering Code
EMMV	Extended Middle Missouri Variant
EO	Executive Order
ER	Engineering Regulation
FB	Fort Berthold Indian Reservation
HIS	Hopewellian Interaction Sphere
HPMP	Historic Properties Management Plan
IMMV	Initial Middle Missouri Variant
KRF	Knife River Flint
ME	Mercer County
ML	McLean County
MMV	Middle Missouri Variant
MN	Mountrail County
MOA	Memorandum of Agreement
MU	Management Unit
MZ	McKenzie County
NAGPRA	Native American Graves Protection and Repatriation Act
NDIRC	North Dakota Intertribal Reinterment Committee

NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
OMP	Operation Management Plan
PA	Programmatic Agreement
PL	Public Law
PUA	Public Use Area
RBS	River Basin Survey
SHPCP	State Historic Preservation Comprehensive Plans
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedures
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Office
TMMV	Terminal Middle Missouri Variant
USACE	United States Army Corps of Engineers
USC	United States Code
WES	Waterways Experiment Station
WI	Williams County
WMA	Wildlife Management Area

## VII. Bibliography

*[The descriptive information has been deleted as archeological site locations are restricted from public dissemination.]*

**FINAL**

**PROGRAMMATIC AGREEMENT  
FOR THE  
OPERATION AND MANAGEMENT OF THE  
MISSOURI RIVER MAIN STEM SYSTEM  
FOR COMPLIANCE WITH THE NATIONAL  
HISTORIC PRESERVATION ACT, as amended**

**MARCH 19, 2004**

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**PROGRAMMATIC AGREEMENT  
FOR THE OPERATION AND MANAGEMENT OF  
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**PREAMBLE<sup>1</sup>**

**BACKGROUND**

The Missouri River corridor is approximately 2,315 miles long. Over the course of thousands of years of occupation, Indigenous Peoples have established and maintained cultures and traditions that revolve around the natural resources of, and wildlife attracted by, the Missouri River ecosystem. This ecosystem and its well being continue to be crucial to the worship practices and life ways of contemporary Indigenous Peoples. There is a direct relationship between the environment, traditional worship practices, and the continued survival of diverse indigenous groups. Animals such as the buffalo, eagle, wolf, turtle, migratory and non-migratory birds, a variety of fish and aquatic plants and animals, as well as several species of trees, shrubs, and plants are central to traditional worship beliefs and practices. Within the Missouri River corridor, important natural springs exist which are sacred to Indigenous Peoples and have been considered so for thousands of years.

For Indigenous Tribal Peoples, the Missouri River is characterized as “The Water of Life” and the very water that created the corridor is considered sacred. When the Army Corps of Engineers built six main-stem dams on the Missouri River, life for the Indigenous Peoples who called the River home changed immediately and dramatically. Gone are many of our ancient, river-bottom homes, our medicines, our sacred places, the earthlodge and tipi village and hunting camp sites created by our beloved ancestors. Gone also are many places intrinsic to our origin stories and to events in our oral histories that are alive in our Peoples’ minds and hearts and in stories which are still related today. The loss of our river homes affected every aspect of the quality of our lives: spiritual, mental, physical, emotional, and socio-economic lifeways, all of which make up our very identity as Native Peoples. Altering the flow of the River altered the face of our Mother Earth, and we are still reeling from and dealing with the consequences of these man-made changes.

As a result of the creation of the Missouri River main stem and attendant dams, there are severe threats to many of the remaining sacred places and important resources that traditional Indigenous Cultures require for continuance. These threats include but are not limited to:

- Impacts caused by increasing development expanding out from urban areas (both on and off the water), which has historically been fueled by inadequate planning and management, as well as poor enforcement of applicable laws and regulations.
- The cultural resources, including traditional and sacred places, within the corridor are routinely raided and looted by pot hunters, at night and often from boats, and by ‘vacation archaeologists’ and pothunters who don’t acquire federally required permits.

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<sup>1</sup> This Preamble was authored by the Tribes that consulted on this PA. It is not intended to and does not reflect the views of the U.S. Army, Corps of Engineers and may not reflect the views of the consulting parties.

- The waters of the lakes created by the Missouri River dams are constantly eroding the shoreline by ice in winter and wind generated waves in summer, or the raising and lowering of lake levels, in places removing shoreline by up to 30 or more feet per year. This erosion is not only an environmental problem, it also erodes indigenous tribal burial sites, ceremonial sites, and occupation sites. The eroding shoreline is causing the disappearance of many wild gathering and harvesting areas crucial to the continuance of traditional ways of life.
- An increasingly serious siltation problem is forming deltas at the mouths of all drainages flowing into the corridor caused by the lack of free flowing water in the corridor itself.
- The dams have adversely impacted the fish populations, as well as nesting birds, river otters, migratory birds, and many other animal species that relied on the natural rhythms of the river, which directly result in several species being identified as listed, threatened, or endangered. Studies have yet to be completed which identify plant (medicines) species that have been impacted by the dams.
- Investments of cooperative initiatives (Tribal, State and Federal) in the reintroduction of habitat along the riverbanks are seriously impacted by rapid erosion, even those plantings designed to slow or halt erosion.
- Increasing concentrations of chemicals and other pollutants are having an adverse impact on the use of water in all areas of life, including ceremonial activities.

For Indigenous Nations, Cultural Resources include animals, plants, and natural resources, as well as burial, occupation, prayer/worship, gathering, and gardening sites. Cultural Resources from the perspective of land-based worshippers also include important viewsheds, buttes, mountains, high ridges, and other natural formations that do not fit any Federal concepts or definitions. This has been problematic for Tribes and Tribal Peoples who see these resources holistically. In contrast, Federal and State law often segment these resources and assign their well being and management to diverse and, at times, competing Federal or State agencies. Under the National Historic Preservation Act (NHPA), an area that is inhabited by a unique community of plants or animals can be recognized as eligible for the National Register of Historic Places because of its ongoing importance for the culture of a living human community as a traditional cultural property (TCP), but in the implementation of the NHPA, much more attention has been given to sites that contain archaeologically important components. In addition, the importance of these relationships is subject to the interpretation of people and agencies that have no connection to either the archaeological/historic component or the plant/animal component and little understanding of their perceived sacredness by Indigenous Peoples.

This Programmatic Agreement is an attempt to address all problems associated with cultural and historic resource impacts involved with the ongoing operation and maintenance of the Missouri River system of main stem dams. It is by design an initiative that will facilitate the development of processes and strategies to minimize, avoid, or mitigate the ongoing adverse impacts the system causes. It is an attempt to overcome barriers keeping worshippers from areas and resources that are essential to their continuing ability to carry out traditional worship pursuits. Furthermore, through the collective establishment and implementation of principles of Consultation, and Collaboration, and Shared Stewardship, this document will lay the groundwork for Tribes to achieve parity with the Corps of Engineers on issues directly affecting important historic, cultural, and natural resources. Though this document is limited in its scope to the application and enforcement of historic preservation and protection laws, it provides

the opportunity to develop a dialogue and forum for the various Indigenous Nations and Federal agencies to begin addressing all resources considered sacred or important by Indigenous Peoples.

**PARADIGM SHIFT**

Historically, the Army Corps and the Tribes have experienced difficulties in addressing these issues in a manner that produces positive change and benefits for Tribes. It is time now to affect a shift in the paradigm that has driven the “management” of tribal sacred and cultural places; a substantial change is, in fact, long overdue. Since the 1970s, according to an Army Corps document issued during the Master Manual comment period, a total of \$1.9 million has been spent by the Omaha District Army Corps to stabilize shoreline for a total of 19 archaeological sites on the Missouri River. Recently, the Northwestern Division announced that \$3 million would be available annually to support the Cultural Resources Office of the Omaha District, all of which should be spent to stabilize the shoreline of the most endangered sacred and cultural places. Recently, the Army Corps staff issued a comprehensive list of the most endangered sites on the Missouri River, which comes with a price tag of \$77 million for shoreline stabilization. There is a tremendous disparity between available funds and what is still needed to preserve and protect our remaining cultural resources, and this disparity can only be addressed by an immediate and drastic change in the way our sacred places are cared for and maintained.

The Tribes expect the Corps to manage lands under its jurisdiction in a manner consistent with the Federal trust responsibility to Indian Tribes. The Corps acknowledges that the trust responsibility includes legal responsibilities and obligations to provide the highest standards of fiduciary care with respect to Federal and other activities that may affect the lands, other trust resources, and the exercise of the powers and rights of Indian nations.

All Corps actions, in the Missouri River Basin, directly or indirectly affect trust land, and some of the lands managed by the Corps are within reservation boundaries established by treaties where the Tribes and their members continue to have treaty-based rights even though lands have been taken out of trust status. Federal lands managed by the Corps (both within and outside reservation boundaries) include places that hold religious and cultural importance of the Tribes, and some of these places are crucial for the cultural identities of the Tribes and, as such, for the survival of the Tribes as distinct Peoples. Some of these places contain the graves of ancestors and funerary objects, in which Federal law recognizes the right of lineal descendants and culturally affiliated Tribes to take custody in the event that they are removed from the Earth. The Tribes expect the Corps to treat these sacred and cultural significant places as subject to the Federal trust responsibility.

This means that the Tribes must be engaged in consultation before decisions are made and that the Tribes expect to be equal participants in making decisions and in carrying out decisions. Consultation shall be both specific to individual Tribes and with as many comprehensive consultations attended by all affected Tribes as are necessary, with real efforts to reach consensus. Consultations shall be conducted in a positive manner, on a government-to-government basis, honoring all treaties and the trust doctrine which entail a fiduciary and fiscal responsibility of the Corps. Decisions will be made on a government-to-government basis. Finally, the Corps shall include, as consulting parties, affected Tribes in any review or update of the Master Manual.

The Tribes expect the Corps to exercise genuine stewardship with respect to places that hold religious and cultural importance for the Tribes and to share the stewardship of these special places with the Tribes. Whether this is called “shared stewardship” or “cooperative management” or some other term, the Tribes expect the relationship that develops between the Corps and the Tribes to be respectful and cooperative, with the ultimate objective of protecting these sacred and culturally importance places and assuring access for religious and cultural activities.

Finally, the Tribes anticipate that this shared stewardship document will ensure that our sacred and cultural places are regarded and understood from a native viewpoint with our values and customs applied to their protection, and not necessarily those of archaeology. For decades, the perceived archaeological value of our sacred places has been the only viewpoint considered, and that method of assigning value to our holy places has contributed to a recipe for their destruction: mix equal parts erosion, neglect and development; let this mixture ‘rest’ for fifty years, add a measure of ‘salvage archaeology,’ destroying the sites to extract data; let the rest fall into the water. And you have a meal that is unfit to eat for Native peoples, a meal which we have been force-fed since the 1930’s, when construction of the first dam near the Ft. Peck Reservation was begun.

The Tribes expect that in the new paradigm, the fundamental value will be respect: respect for the River and for our sacred and cultural places; respect for our values, our culture, our beliefs; respect for Native Peoples and our contributions to the upper Missouri River environment; as well as respect for the tremendous sacrifices we made so that newcomers to our homelands could have flood control and electricity. We want to be taken seriously when we talk about our cultures, our needs, and our issues—and we want to be taken as seriously as archeologists are when they talk about our ancestors, our cultures, and our interests. And that is the second half of the paradigm shift our Nations are all working toward: to bring our interests and issues, articulated from our value system and from our point of view, to a ‘key issue’ priority level with the Omaha District of the Army Corps so that they receive the same attention and resources as other issues for which the Corps has responsibility. We know that what we want is not unreasonable. We also know that the Programmatic Agreement holds great potential to improve relations between the Missouri River Tribes and the Army Corps, and can be the tool we use to create a success story of which we can all be proud.

**PROGRAMMATIC AGREEMENT  
FOR THE  
OPERATION AND MANAGEMENT OF THE MISSOURI RIVER  
MAIN STEM SYSTEM  
FOR  
COMPLIANCE WITH THE NATIONAL HISTORIC PRESERVATION ACT**

**WHEREAS**, the Omaha District and the Northwestern Division of the U.S. Army Corps of Engineers, (hereinafter the Corps) operate and manage the integrated system of multi-purpose reservoir projects and associated structures and lands on the Main Stem of the Missouri River for flood control, navigation, irrigation, municipal and industrial use, recreation, fish and wildlife protection, and other purposes as authorized by the Flood Control Act of 1944 (P.L. 78-543, as amended) and other relevant authorities; and

**WHEREAS**, the Corps' authorized operation and management of impounded waters of the Main Stem System results in adverse effects to properties included in or eligible for the National Register of Historic Places (hereinafter, historic properties) through inundation, erosion, exposure, and other factors; and

**WHEREAS**, the Corps' authorized management of project lands that are not routinely inundated or periodically inundated, including land-based support facilities for water control, facilities and measures for recreation, general public use, access, and the enhancement of the environment, fish and wildlife, and other authorized purposes may result in direct and indirect effects to historic properties such as damage or destruction from construction, burning, erosion, sedimentation, theft, looting, vandalism, and other factors; and

**WHEREAS**, the Corps is responsible for complying with the National Historic Preservation Act, as amended (hereinafter, NHPA) (P.L. 89-665, as amended; 16 U.S.C. 470f), including Section 110 that requires federal agencies 1) to establish a program to preserve, protect, identify, evaluate, and nominate historic properties under their jurisdiction or control (including traditional cultural properties (TCPs) and historic properties to which Tribes attach religious and cultural significance) in consultation with others and 2) to give full consideration to the preservation of historic properties not under their jurisdiction or control but affected by federal agency undertakings; and

**WHEREAS**, the Corps' Main Stem System operations and management actions meet the definition of undertakings for the purposes of Section 106 of the NHPA (16 U.S.C. 470f) (hereinafter Section 106) and, therefore, the Corps is responsible for complying with Section 106 for these actions; and

**WHEREAS**, in compliance with Section 106, the Corps, Indian Tribes (hereinafter Affected Tribes), Tribal Historic Preservation Officers (hereinafter, THPOs) and State Historic Preservation Officers (hereinafter, SHPOs), the Advisory Council on Historic Preservation (hereinafter, ACHP) and other consulting parties have developed and the Corps will implement this Programmatic Agreement (PA) in accordance with 36 CFR Section 800.14(b) for certain of the Corps' operation and management actions as outlined in this PA; and

## STIPULATIONS

Final Programmatic Agreement  
March 19, 2004

**WHEREAS**, the Corps is required by Section 101(d)(6) of the NHPA to consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by a proposed federal undertaking subject to Section 106; and

**WHEREAS**, the United States Department of Defense recognizes its trust responsibilities to federally recognized Indian Tribes and has established an American Indian and Native Alaskan Trust policy that directs Department of Defense agencies, including the U.S Army Corps of Engineers, to work with Tribes in a manner that incorporates tribal needs, traditional resources, stewardship practices, and the development of viable working relationships; and

**WHEREAS**, the ACHP recognizes its trust responsibility to federally recognized Tribes and has described this trust responsibility in its, "ACHP Policy Statement Regarding ACHPs Relationship with Indian Tribes", issued November 17, 2000 and updated on April 4, 2003; and

**WHEREAS**, the Corps recognizes that sacred and cultural resources, many of which are historic properties, are critically important to the Affected Tribes for the continuity and revitalization of cultural and spiritual life-ways, making avoidance of adverse effects to these resources and the preservation of remaining sacred and cultural places a matter of the highest priority regardless of their eligibility to the National Register of Historic Places; and

**WHEREAS**, in addition to the NHPA, the Corps is responsible for compliance with other applicable legal authorities outlined in Attachment 1 to this PA that may overlap with or be supportive of the goals and purview of the NHPA and,

**WHEREAS**, the Corps has provided the opportunity to consult on the development of and to become a signatory to this PA to the ACHP; SHPOs of Montana, North Dakota, South Dakota, and Nebraska; Standing Rock Sioux Tribe and its Tribal Historic Preservation Officer (THPO); Cheyenne River Sioux Tribe and its THPO; Santee Sioux Tribe; Yankton Sioux Tribe; Crow Creek Sioux Tribe; Lower Brule Sioux Indian Tribe; Three Affiliated Tribes; the Assiniboine and Sioux Tribe of Fort Peck; Turtle Mountain Band of the Chippewa Tribe and its THPO; Blackfeet Tribe; Chippewa Cree Tribe; Crow Nation; Flandreau Santee Sioux Tribe; Gros Ventre and Assiniboine Tribe; Northern Arapaho Tribe; Northern Cheyenne Tribe; Oglala Sioux Tribe; Omaha Tribe of Nebraska; Ponca Tribe of Nebraska; Rosebud Sioux Tribe; Sisseton-Wahpeton Sioux Tribe; Spirit Lake Sioux Tribe; Sac and Fox of Missouri in Kansas and Nebraska; South Dakota Department of Game Fish and Parks (SDGFP); Bureau of Indian Affairs (BIA); and the National Trust for Historic Preservation (NTHP) (hereinafter consulting parties).

**NOW, THEREFORE**, the above parties agree that the Missouri River Main Stem System shall be administered in accordance with the following stipulations to avoid, minimize, or mitigate adverse effects and satisfy the Corps' Section 106 responsibilities for those actions outlined within this PA.

**STIPULATIONS**

**The Corps shall ensure the following measures are implemented:**

**1. Definitions.**

The list of definitions used in this Programmatic Agreement is provided in Attachment 2.

**2. 1993 Programmatic Agreement**

The Programmatic Agreement for the Missouri River Main Stem System previously executed by the ACHP, Corps and SHPOs from Nebraska, South Dakota, North Dakota and Montana on October 18, 1993 is null and void.

**3. Scope of this Programmatic Agreement**

**A)** The geographical scope of this PA, based on the Corps' concept of the Area of Potential Effects, is as follows:

- i) federal lands, owned by the Corps, beginning at the headwaters of Fort Peck Lake, approximately 3 miles northwest of the Fred Robinson Bridge, Phillips County, Montana to Gavins Point Dam, Yankton County, South Dakota, including but not limited to Fort Peck Lake and Fort Peck Dam; Lake Sakakawea and Garrison Dam; Lake Oahe and Oahe Dam; Lake Sharpe and Big Bend Dam; Lake Francis Case and Fort Randall Dam; and Lewis and Clark Lake and Gavins Point Dam with project lands and related structures, generally known as the Missouri River Main Stem System; and
- ii) areas downstream of and adjacent to the six Main Stem dams (which are affected by the operation of the system) are within the geographical scope of this PA, even though these areas are not under the authority or ownership of the Corps and may not be in federal ownership. It is recognized that the Corps has restrictions on its use of Main Stem operations monies and other authorities on non-Corps lands.

**B)** The Corps shall comply with Section 106 in accordance with 36 CFR part 800 for the following activities:

- i) Projects, activities, policies by or authorized by the state of South Dakota and/or the Corps on so-called Title VI lands, e.g., lands transferred to the SDGFP pursuant to Title VI of the Water Resources Development Act of 1999, as amended (Title VI hereinafter), as the Corps will begin consultation on the development and implementation of a separate PA for these actions in accordance with 36 CFR Section 800.14(b) by December 2004.
- ii) Corps lands or exchanges, including those pursuant to Title VI;
- iii) Corps regulatory actions pursuant to Section 404 of the Clean Water Act.

**4. Relationship to Treaties, Statutes, Regulations, Executive Orders, Court Orders, and Other Authorities**

**A)** In general, nothing in this PA diminishes or affects any treaty right of an Indian tribe, any water right of an Indian tribe, or any other right of an Indian Tribe, any external boundary of an Indian reservation of an Indian Tribe; any authority of the States that are a party to this PA; any authority of the Corps or the head of any other federal agency under a law in effect on the date of signing of this PA; any treaty or water right, or any other right of an entity that is not a party to the PA.

**B)** No provision of this section or of the PA shall limit any right of an Affected Tribe or other consulting party to bring an action against the Corps or any other party once final agency action is complete; shall alter existing law regarding the sovereign immunity of the Tribes, the other consulting parties, or the Corps, or any other entity that is not a part of this PA; or shall be construed to alter existing law regarding the trust duty of the United States or the Corps to the Tribes (either to limit or expand that trust duty).

**C)** All court orders, including settlement agreements (present and future), shall be implemented and their terms be incorporated into documents and measures or revisions to them called for in this PA. In any case of difference or ambiguity, a court order shall take precedence over the terms of this PA.

**5. Programmatic Agreement Coordination.**

**A) Designated PA Representative(s).** Within 60 days of signing this PA, each Affected Tribe and THPO, ACHP, SHPO, and other consulting party shall designate a point of contact for carrying out this PA (hereinafter, PA representative). If more than one person is designated as PA representatives, the party also shall indicate the responsibilities of each such person for carrying out this PA.

**B) Government/Personnel Changes.** Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall provide timely written notification to the Corps and the other parties to this PA of changes in their tribal or agency leadership (tribal Chairman or President; head of agency, etc.), persons holding cultural and historic preservation positions, and PA representatives.

**6. Consultation.**

All consultation and coordination required under this PA shall be conducted in accordance with the following:

**A) General.** The Corps shall plan consultations to coordinate with the requirements of all applicable statutes and executive orders. Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties shall be provided the opportunity to participate in the development and implementation of agreements, management plans, and activities developed or required under this PA. The Corps, Affected Tribes and THPOs, SHPOs, and other consulting parties shall facilitate and cooperate in the consultation process toward the mutual goal of information sharing and promotion of respect.



**B) Review and Response Requirements.** Unless otherwise provided for in this PA, the Corps shall afford the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties no less than 30 calendar days from receipt of a complete consultation request to respond to a Corps communication required under this PA. A complete consultation request shall include information that the party determines is needed to make an informed decision on the matter. Should any Affected Tribe or THPO, SHPO, or other consulting party not respond within this time limit or other limit specified elsewhere in the PA, the Corps will document in its records when consultation was requested and the non-response. Unless an Affected Tribe or THPO, SHPO, or other consulting party responds in writing that it does not wish to consult at all on the proposed undertaking or matter, the Corps shall assume that the party wishes to continue consulting on subsequent requests related to that initial undertaking or matter. Failure to respond will not be construed as either concurrence or non-concurrence.

**C) Pre-Consultation Actions.** To promote effective and meaningful consultation, the Corps shall notify the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties of the need to consult on the various matters called for in this PA as soon as possible and pre-decisionally as follows:

- i) provide a notification letter with information about the proposed undertaking or matter to each PA representative, with a copy to the head of the agency or tribal government, as early as possible and prior to making any decisions about the proposed undertaking or matter;
- ii) follow-up via telephone with the PA representative after distributing the notification letter to establish a person-to-person contact;
- iii) provide further information as the PA representative may need for informed input and judgment;
- iv) provide draft agendas, request input from the PA representative, and finalize the agenda based on this input;
- v) coordinate consultation for this PA with consultation requirements for other legal bases to the extent possible and inform the PA representative of all pertinent legal bases for consultation.

**D) Consultation Guidelines.** For meaningful and effective consultation with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, the Corps shall

- i) Listen carefully before any decisions are made so as to understand the needs and perspectives of the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties;
- ii) Work as equal partners with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties to consider and devise means to identify and preserve cultural resource sites and avoid effects to them, consistent with tribal viewpoints and values. If avoidance is not possible, the Corps shall work with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties as equal partners to minimize effects to such sites to the greatest extent possible;
- iii) Provide all pertinent documents and other information, consistent with Federal law, to the Affected Tribes and THPOs, SHPOs, ACHP,

and other consulting parties to enable fully informed decisions and meaningful consultation;

iv) Plan consultations jointly with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, including meetings (when and where), conference calls, agendas based on requested input from all involved.

v) Engage in consultation to discuss, dialogue, and make agreements, and do so through face-to-face consultation meetings to the greatest extent possible;

vi) Make and provide written accurate records of all consultations and make copies available to Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties within 30 days of the consultation. Written verbatim records will be made utilizing a court reporter, on a case-by-case basis when requested by a signatory for a face-to-face consultation. When requested by a signatory, verbatim records of telephone conference calls may be made by using a tape recorder, and copies of the tape provided to the requesting signatory. Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties shall have the opportunity to review, offer corrections, and add alternative views to the record;

vii) the federal agencies, affected tribes, THPOs, SHPOs, and other consulting parties shall facilitate and cooperate in the consultation process toward the mutual goal of information sharing, promotion, and respect for the unique relationship of each party and the trust doctrine and trust responsibility of the federal parties.

**E) Input from Tribal Elders.** An Affected Tribe or THPO, SHPO, or other consulting party may respond to a request by informing the Corps that special efforts should be made to seek input from tribal elders and other persons with traditional and cultural knowledge. If the Corps is so notified or if persons with traditional or cultural knowledge notify the Corps that they wish to be consulted regarding a matter, the Corps shall consult with the Tribe and/or THPO regarding appropriate ways to seek input from such persons, and the Corps shall seek such input. Efforts may include (but need not be limited to) conducting special meetings, scheduling meetings at locations to reduce the need for such persons to travel, ensuring that translation services are available, and adjusting the schedule to accommodate input from such persons.

**F) Protocol Agreements.** The Corps recognizes that an Affected Tribe, THPO, SHPO, or other consulting party may have particular issues of concern, ways of conducting business, or protocols that should be considered during consultations. When requested by an officially designated representative or PA representative, the Corps and that party shall cooperatively develop a Protocol Agreement (PRAG) to document that agreed-upon protocol. A PRAG shall be supplemental to the general procedure(s) in this PA and not modify the roles of other parties to this PA without their prior written consent.

**G) Efficient Consultations.** The Corps and the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall work together to develop ways to communicate and transmit information in an effective yet efficient manner. Possible means include (but are not limited to) development of a secure website to which the Affected Tribes and THPOs, SHPOs, ACHP and other consulting

parties have access, electronic transmission of documents, and/or an email broadcast system.

#### **7. Non-National Historic Preservation Act Commitments.**

In consultation with the Affected Tribes and THPOs, the Corps agrees to carry out the actions outlined in Attachment 3 of this PA, all of which are beyond the requirements of the NHPA and the authority of the ACHP and are under the authority of the laws and legal requirements cited therein.

#### **8. Undertakings Review Provisions; Tribal or SHPO Non-Signature, Withdrawal, or Termination; and Exempt Undertakings.**

**A) Undertakings Review.** For Corps undertakings that are planned or anticipated (for example, but not limited to, recreational and other development, silt or sediment removal, habitat creation or restoration, etc.), the Corps shall consult on and address effects to historic properties through the Five-Year Plan, CRMPs, and attendant Treatment Plans as outlined in stipulations 6, 8, 9, and 11 and the other provisions of this PA. However, for those planned or anticipated undertakings not addressed through the Five-Year Plan, CRMPs, and Treatment Plans, the Corps shall comply with section 106, NHPA in accordance with 36 CFR part 800, subpart B. For Main Stem System operations and their indirect adverse effects (including, but not limited to, erosion, exposure, susceptibility to looting or vandalism, etc.), the Corps shall consult regarding and address such effects to historic properties through the terms of this PA.

**B) Tribal or SHPO Non-Signature, Withdrawal, or Termination.** The Corps shall comply with Section 106 in accordance with 36 CFR part 800, subpart B for Corps undertakings that may affect lands, or historic properties, many of which are cultural resources sacred to Tribes, located within the exterior boundaries of an Indian reservation, including Corps lands, if that tribe is not a signatory to this PA or if that tribe has withdrawn from this PA or terminated this PA on its tribal lands (refer to Stipulation 4). Similarly, the Corps shall comply with 36 CFR part 800, subpart B for actions or undertakings within a SHPO's area of jurisdiction, if that SHPO has withdrawn from this PA or terminated this PA within its area of jurisdiction.

**C) Exempt Undertakings.** The Corps, Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall consult to determine if there are certain types of undertakings and actions that should be exempted from review and consultation under this PA because they have little or no potential to affect historic properties. In consulting on this list of exempt undertakings and actions, the Corps shall follow the consultation provisions of stipulation 6 of this PA. The exempt actions and undertakings in such a list shall not go into effect until agreed to, in writing, by the Corps, tribal signatories, SHPOs, and ACHP. The resulting list of exempt undertakings shall be provided to all Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties as an amendment to this PA.

#### **9. Main Stem Reservoir Cultural Resource Management Plans.**

**A) Status.** The Corps has completed the Lewis and Clark Lake, Lake Sharpe and Lake Francis Case Cultural Resources Management Plans (CRMP), and is in the process of completing the Lake Oahe, Fort Peck Lake and Lake Sakakawea CRMPs. The Corps shall ensure that CRMPs for all Main Stem reservoirs are completed by May 2005 and are developed in consultation with the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties to this PA.

**B) Requirements.** The CRMPs will partially fulfill the requirements of the NHPA, this PA, and the requirements of Engineer Regulation 1130-2-540. The CRMPs will provide baseline information about cultural resource sites (including historic properties) at each reservoir and a list of actions to address the goals, objective, and program areas set forth in the Five-Year Plan. The CRMPs will utilize the Lake Sharpe CRMP as a template or any revision to that template developed in consultation with the Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties. Recommended actions (i.e., TCP surveys, archeological surveys, testing and evaluations, etc.) from CRMP shall be completed in accordance with applicable federal laws governing such actions.

**C) Review.** The Corps and the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties shall work together to develop and implement a process by which the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties will be involved in the development and review of draft and final CRMPs and updates to them. Until completion of this process, drafts of the CRMPs and updates of them shall be provided for review and consultation according to the procedures outlined in stipulation 6, except that parties shall have no less than 60 days for review and comment. To facilitate review, the Corps shall provide Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties with related historic property and management information, such as future management actions, needs, and policies; project maps and information showing historic properties, management/use areas, cultural resources survey coverage, leased areas, recreation areas, boundaries of Corps lands, Title VI lands, and so forth. The Corps shall incorporate comments from the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties in finalizing the draft or final CRMPs. After review and comment by the appropriate Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties, the Corps shall ensure that the CRMPs are finalized and implemented.

**D) Revision.** The Corps agrees to update the completed CRMPs every two years. The intent is to monitor progress, incorporate new information, correct information, and allow for additional input into the implementation of the cultural resources program at the reservoir for which the CRMP is written. The review process outlined in stipulation 9.C., above will be used for revising CRMPs.

#### **10. Five-Year Cultural Resources Implementation Plan.**

The Corps, working cooperatively and in consultation with the Affected Tribes and THPOs, SHPOs, ACHP and other consulting parties, shall develop and carry out a plan that outlines how the Corps will conduct its Main Stem System Cultural Resources Program and its various program components individually called for in this PA for the coming five years (hereinafter, Five-Year Plan) and following five year periods

thereafter. The intent of the Corps is to incorporate the final Five-Year Plan into the Corps' Strategic Plan.

**A) The Five-Year Plan shall describe the following:**

- i) actions to identify Mainstem System cultural resource sites (including historic properties) and evaluate them for the National Register of Historic Places that may be affected by Corps undertakings and operations of the Main Stem System and to comply with Section 110, NHPA. Acreage estimates and locations, prioritization of these locations, and tasks (e.g., oral histories, documentary research, etc.) should be described. (See also stipulation 11);
- ii) Corps management and operational actions that may adversely affect historic properties (for example, operations, recreational development, habitat restoration/creation, susceptibility to erosion, looting and vandalism, etc.) and their locations; and
- iii) actions to avoid, minimize, or mitigate adverse effects on historic properties, including identification of specific sites and proposed treatment (subject to consultation with Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties). (See also stipulation 11);
- iv) actions to address potential effects of Corps operations to historic properties located off Corps lands in compliance with Section 110(a)(2)(c), NHPA, recognizing that the Corps may need to seek alternative funding approaches, special authorizations, appropriations, and/or resolution of property permission issues. (See also stipulation 11);
- v) actions to address unexpected discoveries of historic properties or unexpected effects to known historic properties. (See also stipulation 11);
- vi) actions for the management, analysis, and sharing of cultural resource data, including development of protocol to protect sensitive information (See also stipulations 10 and 17);
- vii) actions to support the cultural resources law enforcement program. (See also stipulation 14);
- viii) actions to monitor cultural resources sites, how site-monitoring information will be used for management purposes, and sites selected to be monitored. (See also stipulation 13);
- ix) actions to develop and update CRMPs, Five-Year Plans, and Annual Reports. (See also stipulations 9, 10, 22);
- x) actions to promote public education and interpretive initiatives and the use of historic properties. (See also stipulation 15); and

xi) other actions and program needs that the Affected Tribes or THPOs, SHPOs, ACHP, or other consulting parties have requested in the Five-Year Plan.

**B) Development, Review, and Revision of Five-Year Plan.** Within 180 days of the execution of this PA, the Corps shall provide a preliminary draft version of the Five-Year Plan to the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties. Then, the Corps and these parties shall work together as outlined in stipulation 6 to develop a draft version of the Five-Year Plan for review. The Corps, in consultation with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, shall develop a final Five-Year Plan within 120 days of submission of comments on the draft Five-Year Plan. The Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall be given a 60-day review and comment period for each version. The Corps shall incorporate comments received in developing, finalizing, and implementing the Five-Year Plan. Every five years, the Corps shall revise and update the Five-Year Plan using this same development, review, and consultation procedure.

## 11. Identification of Historic Properties.

**A) Identification Activities.** The Corps shall identify historic properties (including historic properties to which an Affected Tribe attaches religious and cultural significance, traditional cultural properties (TCPs), and other types of cultural resources), in compliance with Section 110 of the NHPA and the Corps' ER and EP 1130-2-540. Additionally, the Corps shall ensure that historic properties are identified prior to making decisions about undertakings, following the review process outlined in stipulation 8.A. Identification methods to be used include (but are not limited to) pedestrian surveys and other field investigations; background and documentary research; oral histories; tribal consultation and consultation with tribal elders; and other means. The Corps shall evaluate whether properties are eligible for the National Register of Historic Places using the eligibility criteria and National Park Service guidance (including Bulletin 38), in consultation with the SHPO and/or THPO with jurisdiction and Affected Tribes that may attach religious and cultural significance.

**B) Location and Recordation of Sites.** The Corps shall locate sites by global positioning system (GPS), complete site visit forms, and add site information to the Corps cultural resources site GIS system. Additionally, the condition and threats to sites will be recorded through the site-monitoring program and added to the GIS system. All site identification and monitoring information shall be included in next update of the applicable CRMP.

**C) Sharing of Data.** Within 120 days of the execution this PA and regularly thereafter, the Corps shall provide existing and updated cultural resource site information in accepted formats or access to the Corps' cultural resources site GIS system to federal, state, and tribal offices charged with maintaining such information.

**D) Traditional Cultural Property (TCP) Surveys.** The Corps shall ensure that surveys and related efforts (e.g., oral history, etc.) for TCPs and other historic properties to which Affected Tribes may attach religious and cultural or

other significance are carried out for project areas identified in the CRMPs and Five-Year Plan. The results of the surveys and other efforts shall be documented using National Park Service Bulletin 38, as well as other pertinent tribal and state requirements, with sensitive information protected pursuant to stipulation 17.

## **12. Measures to Avoid, Minimize, or Mitigate Adverse Effects to Historic Properties.**

Prior to carrying out measures to avoid, minimize, or mitigate adverse effects to a historic property as set forth in the Five-Year Plan and CRMPs, the Corps shall provide a draft Treatment Plan to the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties for review and consultation as outlined in stipulation 6. Alternatively, a draft Treatment Plan may be included in a draft CRMP or draft Five-Year Plan and be reviewed as part of those draft documents. The draft Treatment Plans shall describe the historic property and the adverse effects to it, alternatives measures considered, treatment proposed and why it was chosen, details of how treatment will be implemented, schedule and cost of proposed treatment, and how the treatment meets the pertinent standards and guidelines of the *Secretary of the Interior's Standards and Guidelines for Historic Preservation Projects*, and applicable state and tribal requirements.

## **13. Site Monitoring Program**

**A) Site Monitoring.** The Corps shall develop and implement a monitoring program to provide continued oversight of historic properties located on federal land managed by the Corps and to collect information on site conditions and effects or threats to them (including but not limited to, erosion, recreational, agricultural and other encroachment, and looting and vandalism). The Corps shall use this information to plan and implement law enforcement and other preventive or corrective management actions.

**B) Site Monitoring Plan.** The Corps shall develop a Monitoring Plan to describe the conduct of the monitoring program. The Plan shall discuss the types and location of sites to be monitored, field methodology of monitoring and conditions recordation (including forms, data dictionary); data storage, retrieval and analysis; schedule; staffing and qualifications; and other details. The Corps shall produce a preliminary draft and then the Corps, Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall work together to develop a draft version of the Monitoring Plan, in accordance with stipulation 6. The Corps, in consultation with the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall develop a final monitoring plan within 180 days of submission of comments on the draft Monitoring Plan. The Corps shall implement the final monitoring plan according to the schedule in the monitoring plan, CRMPs, and in response to recent information about potential threats to sites.

## **14. Enforcement Program.**

### **A) Enforcement Memorandum of Agreement(s) (MOA(s)).**

The Corps, in cooperation with the local, state, tribal and federal law enforcement officials, shall develop an Enforcement MOA(s) that provides for a cultural resources enforcement program to address looting, vandalism, and other

illegal activity involving cultural resource sites, including TCPs, archeological resources, graves, and human remains. Specifically, the Enforcement MOA(s) shall address laws, authorities, potential cross-authorities, delegations and deputization of authorities, fine distribution, field deployment, access, sharing of equipment, public education, information reporting, gathering and exchange, and other issues. The Corps shall provide a draft Enforcement MOA for review to all interested parties, including law enforcement officials and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties, within 60 days of the signing of this PA. The Corps shall work with the interested parties to revise the draft Enforcement MOA to address their comments. The Enforcement MOA shall be finalized only after the consultation process has been completed as stated in stipulation 6.

**B) Hotline.** Within 120 days of the signing of this PA, the Corps shall establish and promote a hotline for reporting of looting, vandalism, and other illegal activities and a specific protocol for documentation, verification, and tracking of information, for the purpose of prosecution of offenders.

**C) ARPA Training.** Every three years the Corps shall host an ARPA training class for law enforcement, cultural preservation personnel (tribal, state and federal), and others who may be involved in enforcement activities.

#### 15. Cultural Resource Education Program.

**A) Educational Program.** Engineer Regulation No. 1130-2-540 authorizes the preparation of brochures, slide shows, or other media documentation for public presentation relative to historic preservation activities that may be of particular interest to the Affected Tribes and general public.

i) The Corps shall create educational displays, media shows, interpretive programs, pamphlets, and brochures to enhance public education concerning cultural resources. The parties to this PA will be involved in the development and finalization of these items. The Five-Year Plan and CRMPs will describe how the Corps will carry out this educational and interpretive program.

ii) The Corps, in consultation with the Affected Tribes and THPOs, SHPOs, and as outlined in the CRMPs and Five-Year Plan, will develop an educational program concerning the need to avoid cultural areas and to leave archaeological sites and their material remains undisturbed. The public is generally uninformed about the significance of cultural resources and unaware of the significance of these cultural areas or sites for Affected Tribes whose ancestors lived in these areas and created what are often referred to as archaeological sites.

**B) Signage.** The public must be made aware that cultural sites are being monitored for unauthorized activities and severe criminal penalties could result from illegal activity of looting, artifact collecting, and vandalism. The Corps, in consultation with Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties, shall develop and place signs at agreed upon points of public access to the Missouri River.



**C) Press Release.** In consultation with Affected Tribes and THPOs and SHPOs, the Corps shall issue press releases and conduct press conferences bi-annually (Spring and Fall) to remind the public about the penalties associated with looting, artifact collecting, and vandalizing. A list of local, regional, and multi-state media will be developed in consultation with Affected Tribes and THPOs, and SHPOs.

#### **16. Curation of Artifact Collections, Material, Records, and Data.**

The Corps shall ensure that artifacts are collected on a minimal basis only in those situations that require the collection to support a requirement of the NHPA.

The Corps shall curate artifact collections, material, records, and data according to 36 CFR Part 79.1-Curation of Federally-owned and Administered Archeological Collections and Corps Engineer Regulation 1130-2-433, except that resources meeting NAGPRA definitions will be handled according to the requirements and procedures in the NAGPRA regulations or other memoranda of agreement entered into between the Corps and tribal governments. The Corps shall curate paleontology resources as addressed in Attachment 3. The Corps will continue to carry out its current practice of reburying artifacts on or near the area where they were found during monitoring or other field actions, and their discovery and subsequent reburial will be reported to the Affected Tribes

#### **17. Protection of Sensitive Information.**

**A) Legal Background.** Section 9 of ARPA provides for information concerning the nature and location of archaeological resources on federal land and Indian land to be protected from disclosure under the Freedom of Information Act (FOIA), unless excepted under ARPA. Section 304, NHPA provides that information about the location, character, or ownership of a historic property shall be withheld from disclosure under FOIA if the Corps, in consultation with the National Park Service, determines that disclosure may 1) cause a significant invasion of privacy; 2) risk harm to the historic resource; or 3) impede the use of a traditional religious site by practitioners. The Corps, to the maximum degree possible, shall respect section 9 of ARPA and section 304 of the NHPA in determining *the* release or disclosure of information under FOIA. For the purposes of protection of sensitive information, the Corps shall consider properties or locations that have not been evaluated for their National Register eligibility, including TCPs and properties of religious and cultural significance, as eligible for the National Register in making this determination.

**B) Confidentiality Protocol.** The Corps and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties recognize the need to treat certain kinds of sensitive or proprietary information with confidentiality, including but not limited to information about the location of places that hold sacred significance for Affected Tribes and THPOs. The Corps and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties shall, working in close consultation as outlined in stipulation 6, and assuring compliance with Federal and other applicable law, develop a protocol for the confidentiality of such sensitive information within one-year of signing of this document.

**C) Interim Confidentiality Provisions.** Until such a protocol is adopted, the Corps and Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties shall protect information concerning the nature, character, ownership, or location of archaeological resources or historic properties and withhold such information from disclosure to the public as outlined in subsection A) above of this stipulation. Also, the Corps shall ensure that each document that includes information about any historic property, archaeological resource, or unevaluated location shall be accompanied with a prominent notice that the document and information are to be treated for official use only.

#### **18. Corps Main Stem System Operations Decision Documents.**

The Corps shall consult with Affected Tribes and THPOs, SHPOs, ACHP, and the other consulting parties on draft Annual Operating Plans and other decision documents to determine whether operational changes are likely to cause changes to the nature, location, or severity of adverse effects to historic properties or to the types of historic properties affected and whether amendments to the Corps' CRMP(s) and Five-Year Plan are warranted in order to better address such effects to historic properties.

#### **19. Tribal Partnerships.**

The Corps and the Affected Tribes, THPOs, SHPOs, ACHP shall work together to develop and implement partnerships so that Affected Tribes, THPOs, SHPOs, ACHP are involved in the development and implementation of the Main Stem System cultural resources program and this PA and that promote tribal historic preservation goals. Training, access to cultural resource site information (subject to provisions for protection of such information), historic preservation services, sharing of and/of access to equipment, etc. may be the basis of such partnerships. It is acknowledged that some or all these partnerships may need to be supported by cooperative agreements or other instruments to be negotiated independent of this PA. Additionally, if requested by an Affected Tribe, the Corps shall consult regarding the possibility of tribal access to historic properties that are sacred to the Affected Tribe and THPOs on Corps lands, in fulfillment of Executive Order 13007 and the Corps' EP 1165-2-1, section 3-2. Further, the Corps shall consult with Affected Tribes, THPOs, SHPOs, ACHP regarding the Corps' Tribal Partnership Program established pursuant to Section 203, Water Resources Development Act of 2000.

#### **20. National Historic Preservation Act/Native American Graves Protection and Repatriation Act Overlap.**

The Corps shall comply with Sections 106 and Section 101(d)(6) of the NHPA and the Native American Graves Protection and Repatriation Act (NAGPRA) in circumstances in which both authorities apply, such as the discovery of human remains that may be associated with a historic property. In addition to complying with NAGPRA, the Corps shall take steps to identify if human remains and other types of items meeting the definitions outlined in NAGPRA are associated with a property that may meet the National Register criteria and for which Section 106 and Section 101(d)(6) also apply. In such case, the Corps shall comply with the provisions of this PA and 36 CFR part 800, in addition to NAGPRA and any applicable NAGPRA Memoranda of Agreement (see Attachment 3).

**21. Performance Standards and Qualifications.**

**A) Standards.** The Corps shall ensure that all work required under this PA is carried out in accordance with the professional standards and guidelines outlined in the *Secretary of the Interior's Standards and Guidelines for Historic Preservation Projects* and applicable state and tribal authorities.

**B) Qualifications.** The Corps shall ensure that all work conducted pursuant to this PA is carried out by or under the supervision of persons meeting qualifications set forth in the *Secretary of the Interior's Professional Qualifications Standards*, as amended, for the pertinent discipline (see 48 F.R. 44739). The Corps acknowledges that Affected Tribes possess special knowledge and expertise regarding their tribal values, history, and culture, and properties that may possess traditional religious and cultural significance to them.

**22. Annual Report.**

The Corps shall prepare a report and distribute it to the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties not less than 60 days prior to the date of the annual review. At a minimum, the report shall discuss the topics outlined in Attachment 4 for the past year and the coming year.

**23. Semi-Annual Consultation Meetings and PA Annual Review.**

**A) Semi-Annual Consultation Meetings.** The Corps shall host, at a minimum, semi-annual consultation meetings among the affected Tribes, THPOs, SHPOs, ACHP and other consulting parties to discuss the cultural resource program, Annual report, CRMPs and Action Plan status, activity prioritization, budget planning and other budget matters as necessary, PA implementation and the Corps' Section 106 responsibilities, and other topics of concern to the affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties. The Corps, Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties together shall set the agenda for each meeting by the Corps distributing a call for agenda items at least 30 days prior to the meeting. It is anticipated that one meeting will be during the month of November and the other meeting will be held during the month of April. In order to address new budget issues, a review and planning for the budgetary process shall have priority at the April meeting. The Corps and these parties working together shall develop a schedule for the involvement of the Affected Tribes, THPOs, SHPOs, ACHP, and other consulting parties in the cultural resources activities for the coming year.

**B) PA Annual Review.** Annually, the Corps, Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties shall review this PA and progress in carrying out its provisions to determine whether the PA should be amended or terminated. Review of the PA shall occur at one of the semi-annual consultation meetings and be based, in part, on the annual report prepared by the Corps and submitted to parties not less than 60 days prior to the date of the review. Interim review of this PA may occur due to unsatisfactory performance, based on exercise of the dispute resolution clause, by the Corps or signatory party.

**24. Funding and Budget Planning.**

**A) General.** The Anti-Deficiency Act, 31 U.S.C. 1341, et seq., applies to this PA and must be followed by the Corps as it accomplishes the tasks that it has agreed to perform in this PA. This means that no action, plan, study, task, or the like shall be construed to require the Corps to obligate or expend funds in excess or in advance of an appropriation authorized by law. In addition, the Federal Acquisition Regulations (FAR) apply to the acquisition of goods and services by the Corps as a result of tasks or actions that must be performed pursuant to this PA.

**B) Additional Funding.** The Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties are encouraged to look for other potential funding sources to assist in the implementation of this program. Where applicable, they are encouraged to consider participating in the funding of cultural site preservation through the use of Corps cost sharing programs or other authorities. The Corps agrees that its intent is that all appropriated funds designated for carrying out this PA and attachment 3 will be spent for these purposes. Similarly, the Corps agrees that its intent is that the availability of non-Corps funds for cultural resource purposes will not result in a reduction of Corps appropriated funds for those same purposes.

**C) Budget Planning.** Annually, the Corps shall provide the Affected Tribes and THPOs, SHPOs, ACHP, and other consulting parties with a 60-day period to review and consult on the Corps' draft list of proposed projects for budget consideration to ensure that they are consistent with the Five-Year Plan and CRMPs and other considerations. Signatory parties may elect to enact a prioritization system.

**25. Dispute Resolution.**

**A)** Should a dispute or objection arise regarding any aspect of this agreement or an undertaking subject to review under this agreement, the Corps shall consult with the disputing or objecting party as soon as possible to try to resolve the objection. The disputing or objecting party and the Corps are encouraged to pursue alternative dispute resolution processes including traditional tribal approaches and to consult with the other affected Tribes, THPOs, SHPOs, ACHP and consulting parties.

**B)** If the disputing or objecting party believes that the consultation has failed to resolve the objection or dispute and wishes to pursue the issue, the party shall notify the Corps in writing within 60 days of the initial notification of the dispute. The Corps shall, within 30 days of the receipt of the disputing party notification, submit all relevant documentation pertaining to the dispute or objection with the Corps written proposal for its resolution to the ACHP with a copy to the disputing party.

**C)** Within 30 calendar days of receipt of such written submittal, the ACHP shall either:

- i) Notify the Corps that it shall consider the dispute pertinent to the applicable provisions of 36 CFR 800.7 (b) and respond in accordance with that subsection; or
- ii) Provide the Corps with recommendations, which the Corps shall take into account in reaching a final decision; or
- iii) Respond to the Corps that it will not consider the dispute or provide recommendations, in which case the Corps may proceed with the proposed resolution.

D) In the case of a ACHP response of (C)(ii) or (C)(iii), the Corps shall provide a decision to the objecting or disputing party that takes into account the ACHP's response

**26. Additional Signatories.**

The Corps will consult with the parties to this PA pursuant to stipulation 6 regarding parties who wish to be additional signatories. If the Corps approves the request to become an additional signatory, the party must be a state or Federal governmental agency or an affected tribe or THPO, must sign the Additional Signatory Form in Attachment 5 and submit it to the Omaha District, Army Corps of Engineers. In the annual report or sooner, the Corps shall inform the Affected Tribes, THPOs, SHPOs, ACHP and other consulting parties of additional parties who have signed the PA.

**27. Amendments.**

The Corps, Affected Tribe, THPO, ACHP, SHPO, or other consulting party to this PA may request that the PA be amended whereupon the parties will consult in accordance with stipulation 6 to consider such amendment(s). Any proposed amendment must be provided to the consulting parties as part of the agenda materials prior to the semi-annual meeting and must be discussed at that meeting. To implement an amendment, consensus among the signatories is required. The amendment must be executed by the signatories and in the same manner as this PA.

**28. Withdrawal.**

A) Any party to this PA may withdraw from the PA after first providing the other parties written notice that explains the reasons for withdrawal and providing them an opportunity to consult regarding amendment of the PA to prevent withdrawal.

B) In the case of withdrawal from this PA by an Affected Tribe with tribal lands (see definition for tribal lands in Attachment 2) within the scope of this PA or affected by the Corps' undertakings, the Corps shall comply with 36 CFR part 800, subpart B, for all undertakings on or affecting lands within the withdrawing tribe's tribal lands, in lieu of this PA. With respect to historic properties outside of the withdrawing tribe's tribal lands to which that tribe attaches religious and cultural significance, the Corps shall consult with the withdrawing tribe pursuant to 36 CFR part 800, subpart B, in lieu of this PA.

C) Withdrawal from this PA by a SHPO shall require the Corps to comply with 36 CFR part 800 with respect to all undertakings on or affecting lands within that SHPO's area of jurisdiction, in lieu of this PA.

**29. Termination.**

The Corps, Affected Tribe, THPO, ACHP, and SHPO, or other consulting party who believes that the PA should be terminated shall provide written notification with the reasons for termination to the Corps and other consulting parties at least 60 days prior to a semi-annual consultation meeting. The Corps shall provide this notification in the meeting materials provided to the parties. The parties shall consult to consider an amendment to the PA that would prevent termination. Termination of the PA shall be executed by the consensus of the signatories; or by the ACHP individually; or by a signatory SHPO for its area of jurisdiction; or a signatory Affected Tribe or THPO for its tribal lands within the scope of this PA. In such case, the Corps shall comply with 36 CFR part 800, subpart B, for all undertakings on or affecting lands within the terminating SHPO's area of jurisdiction or the terminating tribe's tribal lands. Termination of this PA in part or entirety will require the Corps to comply with 36 CFR part 800, subpart B with respect to each individual undertaking that would be reviewed under this PA.

**30. Duration.**

Unless this PA is terminated or amended in accordance with this PA, its duration is 40 years from date of the execution of this PA when it will become null and void.

Execution and implementation of this Programmatic Agreement evidences that the Corps has afforded the ACHP a reasonable opportunity to comment on the effects on historic properties related to the Corps undertakings within the scope of this PA.

**SIGNATORIES**

Final Programmatic Agreement  
March 19, 2004

U.S. Army Corps of Engineers, Omaha District

By Kurt W. Belobillo Date 13 April 2004  
Title Commander Omaha District

U.S. Army Corps of Engineers, Northwest Division

By Will E. [Signature] Date 13 MAR '04  
Title \_\_\_\_\_

U.S. Army Corps of Engineers, Headquarters, Washington DC

By [Signature] Date 4-13-2004  
Title \_\_\_\_\_

Advisory Council for Historic Preservation

By John L. Nau III Date 4-13-2004  
Title CHAIRMAN

Nebraska State Historical Society

By Lawrence Summer Date 4/16/04  
State Historic Preservation Officer

South Dakota State Preservation Office

By Jay D. Vogt Date 04-13-2004  
State Historic Preservation Officer

Montana State Historic Preservation Office

By Stacy C. Wilmoth Date 5-12-04  
State Historic Preservation Officer

North Dakota State Historic Preservation Office

By Heidi E. Baerentzen Date 5-12-04  
State Historic Preservation Officer

Cheyenne River Sioux Tribe Historic Preservation Office

By [Signature] Date 4-13-04  
Tribal Historic Preservation Officer

Standing Rock Sioux Tribe Historic Preservation Office

By \_\_\_\_\_ Date \_\_\_\_\_  
Tribal Historic Preservation Officer

**SIGNATORIES**

Final Programmatic Agreement  
March 19, 2004

Turtle Mountain Band of Chippewa

By [Signature] Date 4-13-04  
Tribal Historic Preservation Officer

Assiniboine & Sioux Tribes of Fort Peck

By [Signature] Date 4-13-04  
Title \_\_\_\_\_

Blackfeet Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Cheyenne River Sioux Tribe

By [Signature] Date 4-13-04  
Title \_\_\_\_\_

Chippewa Cree Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Crow Nation

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Crow Creek Sioux Tribe

By [Signature] Date 5-3-04  
Title \_\_\_\_\_

Flandreau Santee Sioux Tribe

By [Signature] Date 4-21-04  
Title \_\_\_\_\_

Gros Ventre & Assiniboine Tribes

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Lower Brule Sioux Tribe

By [Signature] Date 4-13-04  
Title \_\_\_\_\_



**SIGNATORIES**

Final Programmatic Agreement  
March 19, 2004

National Trust for Historic Preservation

By Barbara Pale Date 4-13-04  
Title Regional Director

Northern Arapaho Tribe

By Burt Wether Date 5/12/04  
Title \_\_\_\_\_

Northern Cheyenne Tribe

By John Wooden Egg Date 4-13-04  
Title \_\_\_\_\_

Oglala Sioux Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Omaha Tribe of Nebraska

By Arnold F. H. Date 4-13-04  
Title Chairman

Ponca Tribe of Nebraska

By David D. Date 4-6-04  
Title Vice Chair

Rosebud Sioux Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Sac and Fox of Missouri in Kansas and Nebraska

By Dr. Bucky L. Date 4-13-04  
Title \_\_\_\_\_

Santee Sioux Tribe of Nebraska

By Paul Date 4-13-04  
Title \_\_\_\_\_

Sisseton-Wahpeton Sioux Tribe

By Jim Date 4-21-04  
Title Chairman

**SIGNATORIES**

Final Programmatic Agreement  
March 19, 2004

Spirit Lake Sioux Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

South Dakota Department of Game, Fish and Parks

By Douglas Hofer Date 4/13/04  
Title \_\_\_\_\_

Standing Rock Sioux Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

Three Affiliated Tribes

By August Dittus - Ben Dagg Date 4/13/04  
Title Tribe Council MBR. H. Berthold.

Turtle Mountain Band of Chippewa

By Loon Moni Date 4-18-04  
Title \_\_\_\_\_

Winnebago Tribe of Nebraska

By James E. Snow Date 5-14-04  
Title \_\_\_\_\_

Yankton Sioux Tribe

By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

**SIGNATORIES**

Final Programmatic Agreement  
March 19, 2004

Bureau of Indian Affairs, Great Plains Region

By  
Title

*William B. Tugman*

Date

*9-1-05*

Eastern Shoshone Tribe

By  
Title

*Debra Hill*

Date

*5/12/04*

## Applicable State Laws and Permits

**4. Executive Orders**

- EO 11593 Protection and Enhancement of the Cultural Environment
- EO 12898 Federal Actions to Address Environmental Justice in Minority Populations And Low-Income Populations
- EO 13006 Locating Federal Facilities on Historic Properties
- EO 13007 Protection of Indian Sacred Sites
- EO 13175 Consultation and Coordination with Indian Tribal Governments
- EO 13287 Preserve America

**5. Policy**

Concerning Distribution of Eagle Feathers for Native American Religious Purposes

Department of Defense, American Indian and Alaska Native Policy, 1998

Northwest Division, US ACE, Native American Desk Guide, September. 30, 2002

Guidance Letter #57, Indian Sovereignty and Government-to-Government Relations with Indian Tribes

Guide on Consultation and Collaboration with Indian Tribal Governments and the Public Participation of Indigenous Groups and Tribal Members in Environmental Decision Making, prepared by the National Environmental Justice Advisory Council, Indigenous Peoples Subcommittee, a Federal Advisory Group of the EPA

**6. Federal Guidelines**

Relationship Between Executive Order 13007 Regarding Indian Sacred Sites and Section 106. Advisory Council on Historic Preservation Memo, updated April 4, 2003

Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation Projects.

Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Register Bulletin 38. U.S. Department of Interior, National Park Service, Interagency Resources Division.

How to Evaluate and Nominate Designed Historic Landscapes. National Register Bulletin 18. U.S. Department of Interior, National Park Service, Interagency Resources Division.

**7. Department of Defense and/or USACE Regulations and Guidelines**

- ER 405-1-12 Real Estate Handbook
- ER 1105-2-1 Environmental Compliance Program at Corps Projects and Activities

ER 1130-2-433 and Historical	Collections Management and Curation of Archeological Data
ER 1130-2-438 Preservation Program	Project Construction and Operation Historic
ER and EP 1130-2-540	Cultural Resource Management – Project Operations: Environmental Stewardship Operations and Maintenance Guidance and Procedures
EP 1165-2-1	Digest of Water Policies and Authorities, section 3-12 on E.O. 13007

#### 7. Memoranda Of Agreement

Between the Lower Brule Sioux Tribe, Bureau of Indian Affairs Agency; the Crow Creek Sioux Tribe Bureau of Indian Affairs Agency; and the Omaha District, U.S. Army Corps of Engineers concerning enforcement of federal preservation laws at Big Bend Dam, dated 4 June 2003;

Between the Turtle Mountain Band of Chippewa, the Standing Rock Sioux Tribe, the Spirit Lake Sioux Tribe and the Three Affiliated Tribes, concerning treatment and disposition of unmarked burials associated with these Tribes on Omaha District Corps lands, dated 13 December 1993.

#### 9. Cultural Resources Memorandum

November 2002 Message from the Commander, General David Fastabend, Commander of the Northwest Division, in which he discusses Corps responsibilities to Cultural Resources.

#### 10. Trust Responsibility to Indian Tribes

The ACHP recognizes their trust responsibilities to federally recognized Tribes with regard to this PA. The ACHP's trust relationship with Indian Tribes is described in its ACHP Policy Statement Regarding ACHP's Relationship with Indian Tribes, issued November 17, 2000 and updated on April 4, 2003.

*\* This background information about the federal trust responsibility to Indian Tribes was prepared by tribal attorneys for the educational benefit and convenience of any reader. It was not intended to reflect the views of the U.S. Army, Corps of Engineers and possibly, the consulting parties.*

The Army Corps of Engineers recognizes their trust responsibilities to federally recognized Tribes with regard to this PA.

The trust responsibility is a federal common law and other legal doctrine, the subject of numerous decisions by Federal courts interpreting treaties, statutes, regulation, and executive orders. As described in a 1977 report commission by Congress:

“The purpose of the trust doctrine is and always has been to ensure the survival and welfare of Indian Tribes and people. This includes an obligation to provide for those services required to protect and enhance Indian lands, resources, and self-government, and also includes those economic and social programs which are necessary to raise the

standard of living and social well-being of the Indian people to a level comparable to the non-Indian society.”<sup>2</sup>

The Federal trust responsibility to Indian Tribes has its roots in land cessions made by Tribes in treaties, in the promises made by the United States to protect the rights of the Tribes to govern themselves in the lands that they had reserved, and in the practice of the federal government holding legal title to most Indian land, subject to Indian rights of occupancy and beneficial use.<sup>3</sup> In the present day sense, the trust responsibility can be described as “the federal government’s duty to protect this separatism [of the Tribes] by protecting tribal lands, resources, and the native way of life.”<sup>4</sup> Congress has explicitly acknowledged that “the United States has a trust responsibility to each tribal government that includes the protection of the sovereignty of each tribal government.”<sup>5</sup> The trust doctrine includes fiduciary obligations comparable to those of a trustee for the management of trust land and natural resources and funds derived from trust land, including the duty to act “with good faith and utter loyalty to the best interests” of the Indians.<sup>6</sup> The Federal government has been held liable for mismanagement in some cases.<sup>7</sup> The Supreme Court has acknowledged “the undisputed existence of a general trust relationship between the United States and the Indian people,”<sup>8</sup> although for the Federal government to be liable in damages for breach of trust, the Court has held that fiduciary duties must be based on a relevant statute or regulation, or a network of statutes and regulations.

In several lower Federal court decisions, the trust doctrine has been said to extend to Federal agencies other than the agency charged with management of trust land, resources, and funds (i.e., generally the Bureau of Indian Affairs carrying out the authority of the Secretary of the Interior),<sup>9</sup> Regardless of whether the trust doctrine might

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<sup>2</sup> AMERICAN INDIAN POLICY REVIEW COMMISSION, FINAL REPORT, at 130 (1977) (herein “AIPRC Final Report”), quoted in STEVEN PEVAR, THE RIGHTS OF INDIANS AND TRIBES at 27 (2d ed., 1992).

<sup>3</sup> See generally Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471 (1994) [hereinafter “Wood, Trust I”]; Mary Christina Wood, *Protecting the Attributes of Native Sovereignty: A New Trust Paradigm for Federal Actions Affecting Tribal Lands and Resources*, 1995 UTAH L. REV. 109 (1995) [hereinafter “Wood, Trust II”]. See also FELIX S. COHEN, HANDBOOK OF FEDERAL INDIAN LAW 220-28 (1982 ed.).

<sup>4</sup> Wood, Trust I, at 1496.

<sup>5</sup> 25 U.S.C. §3601.

<sup>6</sup> AIPRC Final Report, *supra* note 1, at 128, quoted in Pevar, *supra* note 1, at 27.

<sup>7</sup> E.g., *United States v. Mitchell*, 463 U.S. 206 (1983) (liability in money damages for mismanagement of timber resources by the Department of Interior) (often referred to as “Mitchell II” to distinguish this decision from *United States v. Mitchell*, 445 U.S. 535 (1980) (“Mitchell I”), in which the Federal government was not held liable); See also *United States v. White Mountain Apache Tribe*, 537 U.S. 465 (2003) (holding that the Court of Federal Claims has jurisdiction over a breach of trust claim arising out of mismanagement of land and buildings held in trust for tribe but occupied by federal government); *contra* *United States v. Navajo Nation*, 537 U.S. 488 (2003) (holding federal government not liable in damages for alleged breach of trust in leasing of land for mineral extraction).

<sup>8</sup> *Mitchell II*, 463 U.S. at 225.

<sup>9</sup> E.g., *Nance v. Environmental Protection Agency*, 645 F.2d 701, 710 (9<sup>th</sup> Cir. 1981) (EPA held to have a fiduciary duty to consider impacts of Northern Cheyenne Tribe’s designation of its reservation as Class I for air quality purposes on Crow Tribe’s ability to mine coal on its reservation, and finding duty fulfilled); *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep’t of the Navy*, 898 F.2d 1410, 1420 (9<sup>th</sup> Cir. 1990) (trust obligation to consider impacts on tribal water rights recognized but held to be satisfied through conservation measures); *Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 573-74 (9<sup>th</sup> Cir. 1998) (discussing distinction between general and specific trust responsibility and hold that general responsibility “is discharged through the agency’s compliance with general regulations and statutes not specifically aimed at protecting Indian tribes”); *contra* ( *North Slope Borough v. Andrus*, 642 F.2d 589, 611 (1980) (a post-*Mitchell I* and pre-*Mitchell II* decision finding no trust

give rise to judicially enforceable claims, the Tribes expect the Corps to act in accordance with the Federal trust responsibility. This includes government-to-government consultation whenever the Corps' "plans or actions affect trust resources, trust assets, or tribal health and safety."<sup>10</sup>

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Some Corps actions directly or indirectly affect trust land, and some of the lands managed by the Corps are within reservation boundaries established by treaties where the Tribes and their members continue to have treaty-based rights even though lands have been taken out of trust status. Federal lands managed by the Corps (both within and outside reservation boundaries) include places that hold religious and cultural importance of the Tribes, and some of these places are crucial for the cultural identities of the Tribes and, as such, for the survival of the Tribes as distinct peoples. Some of these places contain the graves of ancestors and funerary objects, in which Federal law recognizes the right of lineal descendants and culturally affiliated Tribes to take custody in the event that they are removed from the Earth. The Tribes expect the Corps to treat these sacred and cultural significant places as subject to the Federal trust responsibility.

This means that they must be engaged in consultation before decisions are made and that the Tribes expect to participate in making decisions and in carrying out decisions. Consultation will be both specific to individual Tribes and with as many comprehensive consultations attended by all affected Tribes, THPOs, SHPOs, ACHP as are necessary with real efforts to reach consensus. Consultations will be conducted in a positive manner, on a government-to-government basis, honoring all treaties and the trust doctrine and other law, which entails a fiduciary and fiscal responsibility of the Corps. Decisions will be made on a government-to-government basis. Finally, the Corps will continue to include, as consulting parties, affected Tribes, THPOs, SHPOs, ACHP in any review or update of the Master Manual.

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responsibility in the absence of specific statutory provisions). See Wood, Trust I, *supra* note 2, at 1527-1535, Wood, Trust II at 117-21, *supra* note 2.

<sup>10</sup> The quoted language is from the Department of the Interior's Departmental Manual (DM) and applies to all bureaus and offices within DOI. 516 DM 2.2. While the DM does not apply to the Corps, the Tribes believe that the basic principle does apply to the Corps.

## ACRONYMS AND DEFINITIONS

## ACRONYMS

ACHP – Advisory Council on Historic Preservation  
APE – Area of Potential Effects  
ARPA – Archaeological Resources Protection Act  
CRMP – Cultural Resources Management Plan  
NAGPRA – Native American Graves Protection and Repatriation Act  
NHPA- National Historic Preservation Act  
SDGFP-South Dakota Department of Game, Fish, and Parks  
SHPO – State Historic Preservation Officer  
THPO – Tribal Historic Preservation Officer

## DEFINITIONS

Adverse Effect – “an effect of an undertaking that may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” 36 C.F.R. §800.5(a). This section of the ACHP regulations provides additional guidance on how to determine whether an effect is adverse and examples of adverse effects.

Advisory Council on Historic Preservation (ACHP) – an independent agency created by the Title II of the National Historic Preservation Act (NHPA), 16 U.S.C. §§470i through 470v. The ACHP issued regulations, 36 C.F.R. part 800, governing the section 106 review process and oversees the conduct of the Section 106 process (see section 106, 16 U.S.C. §470f, and section 211, 16 U.S.C. §470s.)

Affected Tribe – Any Indian Tribe, as defined in this Attachment, that attaches religious and cultural significance to cultural resources, including historic properties, as provided in the scope of this PA, regardless of the location or nature of the undertaking, or regardless of whether the Tribe has been or will be developing any other agreements. Any Tribe that is included in the signatory portion of this PA, whether or not such tribe has signed this PA, and any other Tribe that becomes an “additional signatory” pursuant to Stipulation 26.

Archaeological Resource – “any material remains of past human life or activities which are of archaeological interest,” and that are at least 100 years of age, including graves and human remains if found in an archaeological context, as defined in the Archaeological Resources Protection Act (ARPA), 16 U.S.C. §470bb. The uniform regulations provide extensive elaboration on the definition, including the key phrase “of archaeological interest.” 43 C.F.R. §7.3(a); 32 C.F.R. §229.3(a). The phrase “of archaeological interest” is defined in regulations as “capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observations, contextual measurement, controlled collection, analysis, interpretation and explanation.” The statutory definition explicitly includes graves and human remains, which are also the subject matter of the Native American Graves Protection and Repatriation Act (NAGPRA); funerary objects, sacred objects, and objects of cultural patrimony covered



by NAGPRA may be archaeological resources if at least 100 years of age and found in an archaeological context. An archaeological resource may be a historic property, or located within a historic property, as that term is used in the National Historic Preservation Act (NHPA) and this PA. A site at which archaeological resources are located may also be an Indian sacred site as defined in Executive Order 13007.

Area of Potential Effects – “the geographic area or areas within which an undertaking may directly or indirectly cause alternations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.” 36 C.F.R. §800.16(d).

ARPA Permitting Process – permit process for the excavation or removal of archaeological resources from federal public lands and Indian lands, established pursuant to ARPA and conducted pursuant to uniform regulations codified at 43 C.F.R. part 7; 32 C.F.R. part 229. For “Indian lands” see also supplemental regulations issued by Department of Interior 43 C.F.R part 7, subpart B (§§7.31 – 37) and supplemental regulations issued by Bureau of Indian Affairs, 25 C.F.R. part 262.

Consensus – For purposes of this PA, consensus means either that all of the signatories agree or that none of the signatories objects.

Consultation – “the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process. The Secretary’s ‘Standards and Guidelines for Federal Agency Preservation Programs pursuant to the National Historic Preservation Act’ provide further guidance on consultation.” 36 C.F.R. §800.16(f). The stipulations in this PA provide detail on how consultation will be conducted for purposes of compliance with this PA. Consultation in other contexts may be conducted somewhat differently than as provided for in this PA, and may be subject to the requirements of other statutes, regulations and other sources of law, including those listed in Attachment 2.

Consulting Parties – with the exception of the Corps, all officials and entities named in the “Signatures” section of this PA whether or not they have signed the PA and all additional signatories pursuant to Stipulation 26. Those consulting parties whom are signatories to this agreement shall be consulted and treated as outlined in this PA. Those consulting parties that have not signed will be consulted following the Secretary’s “Standards and Guidelines for Federal Agency Preservation Programs Pursuant to the National Historic Preservation Act” 36 C.F.R. §800.16(f).

Cultural Resource(s) – a general “term of art” without a specific legal definition used to refer to “all elements of the physical and social environment that are thought to have cultural value.” Thomas F. King, *Places That Count: Traditional Cultural Properties in Cultural Resources Management* (Alta Mira Press, 2003), p. 11. For purposes of this PA, cultural resources include historic properties, archaeological resources, sacred sites, religious sites, burial sites, properties of traditional religious and cultural importance, and Native American cultural items (including human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony). A cultural resource site is the location of a cultural resource.

Cultural Resource Management – activities and tasks involved in the stewardship of cultural resources, including to identify, evaluate, maintain, protect, and otherwise treat

cultural resources, and to comply with historic preservation and environmental law (including the NHPA, ARPA, AIRFA, NEPA, EO 13007, EO 13287). These activities and tasks are described in detail in many sources, including federal laws, regulations, and guidance and the “Secretary of the Interior’s Standards and Guidelines for Historic Preservation Projects,” (48 Fed. Reg. 44716) and the many publications of the National Park Service. U.S. Army Corps Engineering Regulation and Pamphlet 1130-2-540 discuss cultural resources stewardship and cultural resources management.

CRMP – cultural resources management plan. See stipulation 9 of the PA.

Effect – “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.” 36 C.F.R. §800.16(i).

Eligible for Inclusion in the National Register – “includes both properties formally determined to be as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.” 36 C.F.R. §800.16(l)(2). Criteria of eligibility are codified at 36 C.F.R. §60.6. Regulations of the Secretary of the Interior for determinations of eligibility are codified at 36 C.F.R. part 63. Determinations of eligibility may also be made during the section 106 process. 36 C.F.R. §800.4.

Federal Acquisition Regulations – the regulations governing procurement by federal agencies, codified at 48 C.F.R. Part 1.

Federal Lands – In NAGPRA, the term “Federal lands” is defined as any “lands other than tribal lands which are controlled or owned by the United States, including lands selected by but not yet conveyed to Alaska Native corporations and groups organized pursuant to the Alaska Native Claims Settlement Act.” 25 U.S.C. §3001(5). The substance of this definition closely corresponds to the definition of the term “public lands” as used in ARPA. “Federal lands” that are within the boundaries of an Indian reservation are also “tribal lands” for purposes of NHPA and NAGPRA. [Note: Individual Indian allotments that are outside the boundaries of an Indian reservation and not otherwise within a “dependent Indian community” are considered “federal lands” for purposes of NAGPRA. 60 Fed. Reg. 62140 (1995).]

Final Agency Action – an agency action that is not subject to review within the agency and, as such, may be subject to judicial review in federal court pursuant to the Administrative Procedure Act. 5 U.S.C. §§551, 701 – 706, or other federal statute.

Historic Property – “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.” 36 C.F.R. §800.16(l)(1), providing elaboration on the statutory definition codified at 16 U.S.C. §470(w)(5). See also definitions of “eligible for inclusion in the National Register” and “National Register Criteria” in this Attachment.

Historic Resource – is a statutory synonym of “historic property.” 16 U.S.C. §470w(5).

Impacts - any change to a cultural resource site, including a historic property

Indian Land – as defined in the Archaeological Resources Protection Act (ARPA), “lands of Indian Tribes, or Indian individuals, which are either held in trust by the United States or subject to a restriction on alienation imposed by the United States, except for any subsurface interests in lands not owned or controlled by an Indian tribe or an Indian individual.” 16 U.S.C. §470bb(4). This term is not synonymous with “tribal lands” as defined in NHPA and NAGPRA.

Indian Sacred Sites – as used in Executive Order 13007, “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or an Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion, provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.” Executive Order 13007 (May 24, 1996) (published in notes following 42 U.S.C. §1996). [Note: The definition in EO 13007 is considerably more narrow than the way in which this term is commonly used by Tribes and individual Indians.]

Indian Tribe or Tribe – “an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional corporation or Village Corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.” 16 U.S.C. §470w(4).

Main Stem – the series of dams and reservoirs along the upper Missouri River. For the purposes of this PA those dams and reservoirs are Gavins Point Dam/Lewis and Clark Lake, Fort Randall Dam/Lake Francis Case, Big Bend Dam/Lake Sharpe, Oahe Dam/Lake Oahe, Garrison Dam/Lake Sakakawea, and Fort Peck Dam/Fort Peck Lake.

National Register – the National Register of Historic Places maintained by the National Park Service through the authority of the Secretary of the Interior.

National Register Criteria – the criteria of eligibility for the National Register established in regulations issued by the Secretary of the Interior. 36 C.F.R. §60.6.

Project Lands – land owned by the U.S. Army Corps of Engineers, Omaha District that are associated with the dams and reservoirs on the upper Missouri River. For the purposes of this PA those dams and reservoirs are Gavins Point Dam/Lewis and Clark Lake, Fort Randall Dam/Lake Francis Case, Big Bend Dam/Lake Sharpe, Oahe Dam/Lake Oahe, Garrison Dam/Lake Sakakawea, and Fort Peck Dam/Fort Peck Lake.

Section 106 – section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. §470f, as implemented through regulations issued by the ACHP, 36 C.F.R. part 800.

Shared Stewardship – pre-decisional consultation with Affected Tribes, THPOs, SHPOs, ACHP and other consulting parties, especially with any Affected Tribe concerning an undertaking that may affect any sacred or cultural resources associated with such a tribe. Any Affected Tribe that attaches religious or cultural importance to a historic resource that is the subject of consultation will have an equal role with the Corps in determining the appropriate treatment and management of the resource.

Signatories – all the parties that have signed this PA, including any that may be added as additional signatories pursuant to stipulation 26.

State Historic Preservation Officer (SHPO) – “the official appointed or designated pursuant to section 101(b)(1) of the [NHPA] to administer the State historic preservation program or a representative designated to act for the State historic preservation officer.” 36 C.F.R. §800.16(v).

Traditional Cultural Property -- a property that is “eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community.” National Park Service, National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties (1990), available at [www.cr.nps.gov/nr/publications/bulletins/nrb38/htm](http://www.cr.nps.gov/nr/publications/bulletins/nrb38/htm).

Treatment Plan – Information describing a historic property and how it is proposed to be treated. Rehabilitation, stabilization (including riprapping, revegetation, recontouring of areas surrounding the property, etc.), maintenance, and archaeological excavation are possible treatments.

Tribal Historic Preservation Officer (THPO) – “the tribal official appointed by the tribe’s chief governing authority or designated by a tribal ordinance or preservation program who has assumed the responsibilities of the SHPO [State Historic Preservation Officer] for purposes of section 106 compliance in tribal lands in accordance with section 101(d)(2) of the act.” 36 C.F.R. §800.16(w). [Note: See section 101(d)(2), National Historic Preservation Act, 16 U.S.C. §470a(d)(2).]

Tribal Lands – as defined in the National Historic Preservation Act, “(A) all lands within the exterior boundaries of any Indian reservation; and (B) all dependent Indian communities. 16 U.S.C. §470w(14). Within the scope of this PA, the NHPA definition is identical to the Native American Graves Protection and Repatriation Act (NAGPRA) definition, 25 U.S.C. §3001(15). [Note: “Tribal lands” for purposes of NHPA and NAGPRA is not synonymous with “Indian lands” for purposes of ARPA. Federal lands, including lands administered by the Corps, as well as lands owned by state and local governments and private persons, within reservation boundaries of Indian Tribes are “tribal lands” for purposes of NHPA and NAGPRA. For the purposes of this PA, the service area of the Santee Sioux Tribe of Nebraska shall be considered “tribal lands”.]

Undertaking – “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out with Federal financial assistance; those requiring a Federal permit, license or approval...” 36 C.F.R. §800.16(y). [Note: The regulatory definition includes one more clause: “and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.” This clause was the subject of a federal court decision in 2003, and the ACHP has issued a proposed revision to that clause of the regulatory definition. 68 Fed. Reg. 55354 (Sept. 25, 2003).]

**The Corps agrees to complete the following with all Affected Tribes:** Memoranda of Agreement among the Omaha District, Army Corps of Engineers and Affected Tribes Regarding NAGPRA, ARPA, Paleontological Resources, and Other Items that are Commitments Outside of the Missouri River Main Stem System Programmatic Agreement utilizing but not limited to the following outline:

Should a disagreement occur between the parties that have entered into these requirements the processes under each of these laws shall be used to resolve those disagreements.

**Outline:**

**1. Native American Graves Protection and Repatriation Act (NAGPRA)**

a) Inadvertent discoveries of human remains, artifacts, and funerary objects. The Corps will follow the terms of the Native American Graves Protection and Repatriation Act regulations (NAGPRA), 43 CFR 10 et seq and applicable Memoranda of Agreement (MOA) with Tribes.

b) Memorandum of Agreement, North Dakota Intertribal Reinterment Committee. The Corps will follow the provisions as detailed in the North Dakota Intertribal Reinterment Committee (NDIRC) Memorandum of Agreement. This would apply for all those Tribes that have signed the NDIRC MOA. There is a clause in the NDIRC MOA that allows for other Tribes to join the agreement.

c) Memorandum of Agreement, Non-NDIRC Tribes. The Corps will develop a MOA to implement the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) with those Tribes that have not signed the NDIRC MOA. A draft NAGPRA MOA shall be developed collaboratively with the affected Tribes, THPOs, SHPOs, ACHP, within 2 years of signing of this programmatic agreement. A final NAGPRA MOA shall be completed within 180 days from receipt of comments on the Draft NAGPRA MOA.

d) The Corps will ensure that resources meeting NAGPRA definitions are handled according to the requirements and procedures listed in the NAGPRA regulations or other memoranda of agreement entered into by the Corps and tribal governments. Continued progress will be made on the repatriation of artifacts under the Corps control and protection and located in a museum or curation facility in which the Corps has an active agreement or contractual obligation.

**2. Archeological Resources Protection Act.**

a) ARPA Permits. Prior to a decision about issuance of an ARPA permit, the Corps will provide copies of the ARPA permit application to affected Tribes, THPOs, SHPOs, ACHP and other consulting parties for review and comment. The Corps will take these comments into account in making a decision about issuance of the permit.

**3. Paleontology Resources**

a) The Corps will curate paleontology resources in the same manner as archeological collections. Agreements with curation facilities will be formatted according to the example given in 36 CFR Part 79.1.

**4.** Federal Undertakings and actions on lands outside the scope of this PA

**a)** In consultation with the Affected Tribes, the Corps, will review its protocols and procedures regarding Corps actions, past and present, beyond the scope of this PA to ensure tribal consultation consistent with Federal laws, Executive Orders, and other legal authorities.

**ANNUAL REPORTS**

Annually, the Corps shall prepare a report that includes discussion of the following topics both for the past year and as anticipated or planned for the coming year:

- 1) List of all undertakings within the project area;
- 2) Description of all surveys and activities undertaken to identify and evaluate historic properties and results of such efforts;
- 3) Description of all historic properties affected or potentially affected by Corps undertakings;
- 4) Description of measures to avoid, minimize, or mitigate effects to historic properties, including Treatment Plans;
- 5) Status of Five-Year Plan, assessment of progress in meeting its goals, and suggestions for revision;
- 6) Status of CRMPs and assessment of progress in fulfilling recommendations;
- 7) Status of the enforcement program and assessment of its effectiveness;
- 8) Status of site monitoring program and assessment of progress in meeting its goals;
- 9) Status of public education and interpretive activities;
- 10) Status of cultural resources program budget, including funding problems;
- 11) Additional signatories to the PA; notifications to amend, withdraw from, or terminate the PA;
- 12) General assessment of how well the PA is working; and
- 13) Any other facts the Corps considers pertinent to evaluation of the activities covered by the PA and any available information that the affected Tribes, THPOs, SHPOs, ACHP and other consulting parties may have requested that the Corps incorporate into the report.

**Additional Signatory Form**

Missouri River Main Stem System Programmatic Agreement

\_\_\_\_\_  
Tribe/Agency/Entity

By \_\_\_\_\_ Date \_\_\_\_\_



## **APPENDIX G**

### **THE U.S. ARMY CORPS OF ENGINEERS PLANNING PROCESS**

The planning process is a structured approach to problem solving. Although ideally, the process starts with Step 1 (identifying problems and opportunities) and proceeds sequentially through the other steps, ending in Step 6 (selecting a plan), planning can begin with any step. Because the process can begin anywhere, it is an iterative process - as more information is acquired and developed, some of the previous steps may be reiterated. The six steps of the planning process are shown in figure 1 and are described as follows:

#### **1. IDENTIFYING PROBLEMS AND OPPORTUNITIES**

This is the most important step in the planning process. Once the problems and opportunities are described, the next task is to define the objectives and constraints that will guide efforts to solve those problems and achieve those opportunities. Problems are existing, negative conditions, whereas opportunities focus on desirable, future conditions. Objectives are statements that describe the results you want to get by solving the problems and taking care of the opportunities you identified. Constraints are statements about things you want to avoid doing, or things you cannot change, while meeting your objectives.

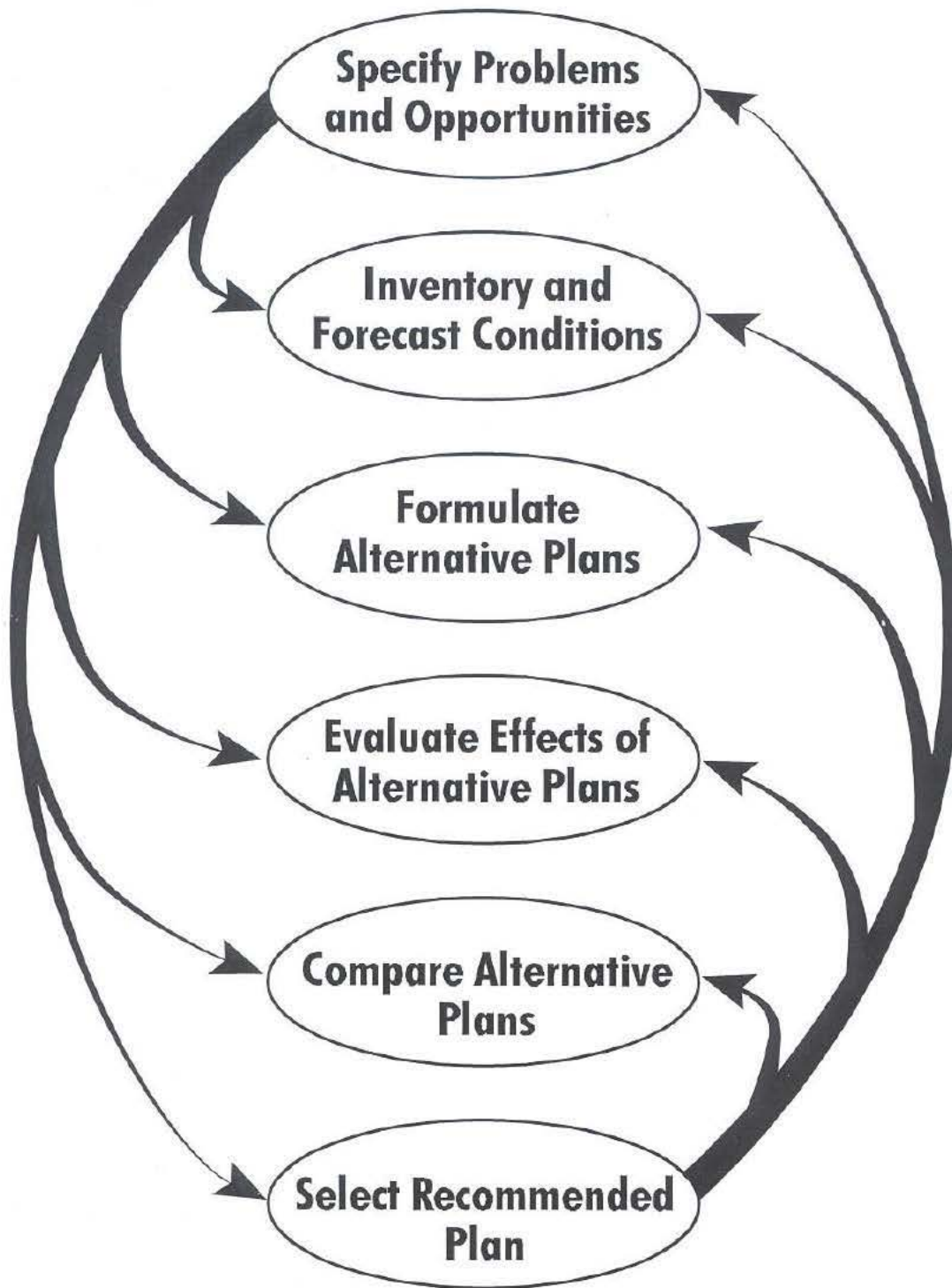
#### **2. INVENTORYING AND FORECASTING CONDITIONS**

This is the information gathering step. Inventories and forecasts are generally concerned with the historic, existing, and future conditions of resources that will be affected by solutions to the problems. These resources may be natural, economic, or social. They will help to shape the plans to be considered, or they will be affected, intentionally or unintentionally, by one or more of the plans to be considered.

#### **3. FORMULATING ALTERNATIVE PLANS**

Plan formulation is the process of identifying specific solutions to achieve planning objectives while avoiding constraints so as to solve the problems and realize the opportunities that got the investigation started. Solutions consist of alternative plans built from management measures. A management measure is a feature or an activity that can be implemented at a specific geographic site to address one or more planning objectives.

**Figure 1. The U.S. Army Corps of Engineers Planning Process.**



#### 4. EVALUATING ALTERNATIVE PLANS

The evaluation step considers what difference each plan can make. The difference is quantified by comparing without project and with project conditions to identify the effects of alternative plans. The essential purpose of the evaluation step is to determine whether or not a formulated plan is worthy of further consideration

#### 5. COMPARING ALTERNATIVE PLANS

In this step, the plans that qualified for further consideration are compared to come up with the best plan. Whereas in the previous evaluation step the effects of each plan were assessed individually, in the comparison step the important effects across all plans are assessed. The purpose of plan comparison is to identify the most important effects, and to compare the plans against one another across those effects. Ideally, the comparison will conclude with a ranking of plans or some identification of advantages and disadvantages of each plan for use by decision makers.

#### 6. SELECTING A PLAN

This is the big decision making step. The first choice is always to do nothing. Planners have the burden of demonstrating that any plan that is recommended is better than doing nothing. The second choice is to select the plan that is required by law or policy, and the third choice is to do something else. Regardless of the choice, those who do the choosing must have good reasons for the final selection.

Source: U.S. Army Corps of Engineers. 1997. Planning Primer. Institute for Water Resources Report 97-R-15. <http://www.au.af.mil/au/awc/awcgate/army/97r15.pdf>.

**APPENDIX H**  
**MOU BETWEEN USACE, OMAHA DISTRICT AND NDGFP**



**US Army Corps  
of Engineers ®**  
Omaha District



## **MEMORANDUM OF UNDERSTANDING**

**Between**

**The United States Army Corps of Engineers,  
Omaha District**

**and**

**The North Dakota Game and Fish Department**

### **I. Purpose.**

The purpose of this Memorandum of Understanding (MOU) is to develop and coordinate restoration and enhancement activities affecting fish and wildlife resources on the Missouri River System in North Dakota including the North Dakota portion of Lake Oahe and Lake Sakakawea. Through collaborative efforts it is intended that restorative measures, which enhance fish and wildlife resources, will be identified. The result should benefit threatened and endangered species and other fish and wildlife and promote a positive working relationship between the Department and the Corps which ultimately will foster public acceptance for the actions undertaken.

### **II. Responsibilities.**

- A. The Corps, subject to availability of resources in accordance with applicable laws, regulations, and policies will:
  1. Provide all draft plans and proposals for implementing the Biological Opinion (BiOp) and other fish and wildlife restoration / enhancement actions in North Dakota to the NDGF for review, comment, and discussions prior to releasing any plans or proposals to the public.
  2. Coordinate release of information pertinent to the BiOp and fish and wildlife restoration / enhancement actions in North Dakota, such as dates and meeting locations, with the NDGF prior to releasing the information.
  3. Establish product delivery teams for implementing features of the BiOp and include member(s) from the NDGF on the teams.
  4. Implement combined Corps / NDGF recommendations. Priorities will be set in a meeting, at least annually, between the two agencies. This meeting will also include budget information from the Corps and expected funding available for work in North Dakota along the Missouri River to implement the BiOp and fish and wildlife restoration / enhancement actions.



5. Provide prompt review and comment (within 3 weeks) to plans and recommendations provided by the NDGF.
6. Make every effort to first consult with the NDGF before making unilateral decisions concerning implementation of the BiOp in North Dakota. If the Corps must make such a decision without NDGF consultation, the Corps will inform the NDGF of the decision and why as soon as practical.
7. Coordinate its operational, developmental, and regulatory functions to a level that is consistent and compatible with the BiOp and the fish and wildlife restoration / enhancement efforts.

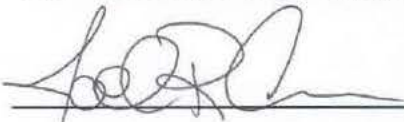
B. The NDGF, subject to availability of resources and in accordance with applicable laws, regulations, and policies will:

1. Develop a series of actions within the Missouri River System in North Dakota, which will result in specific fish and wildlife benefits. These action items, or projects, will focus primarily on federally threatened and endangered species and state species of greatest conservation need and the habitats they require.
2. Participate in product delivery teams.
3. Provide prompt review and recommendations (with in 3 weeks) to the Corps on projects.
4. Work with partners in the development of actions and lend a larger perspective to the benefits of species' specific projects.
5. Work with other agencies, governmental subdivisions, the public, and the press to explain the conservation actions and provide a holistic perspective of the benefits of each project.

**III. General Principles.** It is mutually agreed and understood that:

- A. The parties to this MOU or their designated representatives will meet at least annually to review implementation.
- B. The MOU may be modified as necessary by mutual agreement of both parties by written amendment signed by an authorized representative.
- C. Either party may terminate this MOU by providing 45 day written notice to the other; otherwise this MOU remains in force indefinitely.

**IV. Effective Date.** The parties have executed this MOU as of the last date written below.



Jeffrey A. Bedey  
Colonel, Corps of Engineers  
District Commander



Terry R. Steinwand  
Director  
North Dakota Department of Game & Fish

Date 6/27/06

Date 6/6/06